

THE
MEDICAL JOURNAL
OF AUSTRALIA

VOL. I.—10TH YEAR.

SYDNEY: SATURDAY, JUNE 23, 1923.

No. 25.

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—A Physician writing in the "Glasgow Medical Journal."

THE PRESENT.

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PROGRESS REPORT ON THE HEALTH PROGRAMME OF HALIFAX AND DARTMOUTH.

By B. FRANKLIN ROYER, M.D., D.Sc.
Executive Officer, Massachusetts-Halifax Health
Commission, Director of Public Health
Nursing, Dalhousie University.

Some of the hopes and plans of those promoting the post-war health programme for Halifax and Dartmouth have already been realized; others are likely to be realized in the near future.

The general death rate for the City of Halifax has declined from an average above 20‰ for a period of ten years to 14.3‰ population for the last statistical year ended September 30, 1922. The infant mortality, which averaged above 180 for a period of ten years, last year dropped to 97.5‰ babies born alive. The two graphs accompanying this article tell the story in convincing fashion.

At the beginning of our work the public were encouraged to believe that many lives might readily be saved by an aggressive campaign and that by the end of a five year period we might each year expect a saving of 350 lives a year and more lives might be saved in the area affected by the explosion during each subsequent five-year period than had been sacrificed in the great disaster, namely 1,635.

Already the saving in Halifax for the last year alone has equalled as many lives as we had expected to save annually at the end of five years—and this after but three years of aggressive work.

The statistical data are not so readily accessible for Dartmouth and a populous rural area adjacent, because these figures are compiled by the Dominion Government and are apt to be confused with rural areas of the county beyond. For our purpose we will discuss chiefly the decline in rates in the City of Halifax, with a population (estimated) for June, 1922, of 59,547.

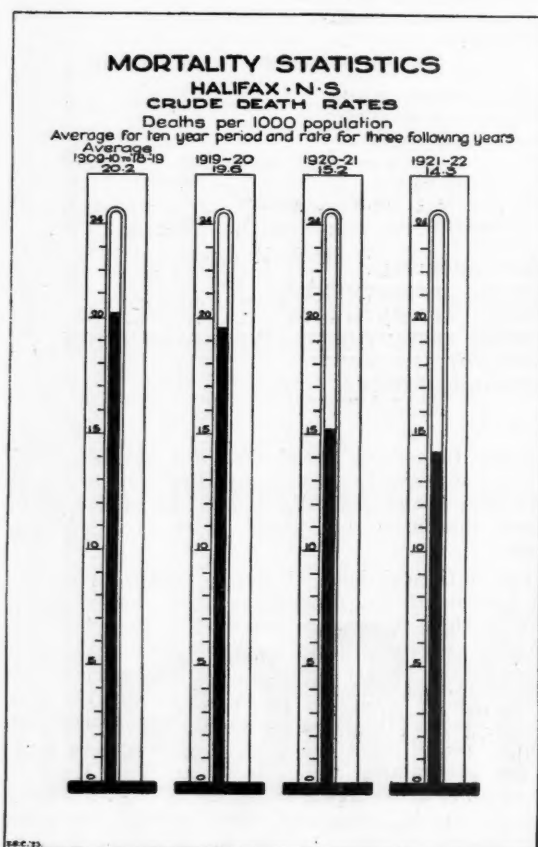
The programme as outlined in THE MEDICAL JOURNAL OF AUSTRALIA for April 29, 1922, has been carried out in practically every detail. The milk regulations referred to for the City of Halifax were not strictly enforced during the heated season of 1922 because of a hold-up in prosecutions and delayed court decisions. An increase of 30% in the pasteurized milk supply did take place, however, and a large proportion of the remainder was bottled. Now (April 1, 1923) this regulation is in full force and it is hoped that the campaign of education waged jointly by the City Health Department and the Commission looking towards compulsory pasteurization of the milk supply of the city will be brought about by June of this year (see Graph I.).

The water supply of Halifax has been continuously chlorinated and for the first time last summer a reasonable attempt was made to minimize fly-breeding by requiring the removal of manure beyond the city limits at weekly intervals during the fly-breeding season.

The nursing staff has gradually increased. During the summer season of 1922 fourteen public health nurses were visiting in the homes of more than two thousand families in Halifax and one visiting housekeeper was giving her entire time to families where nutrition problems were paramount. Beginning with the first of September, the visiting housekeeper staff was increased from one to three (part time of one being devoted to Dartmouth) and a campaign of more intensive educa-

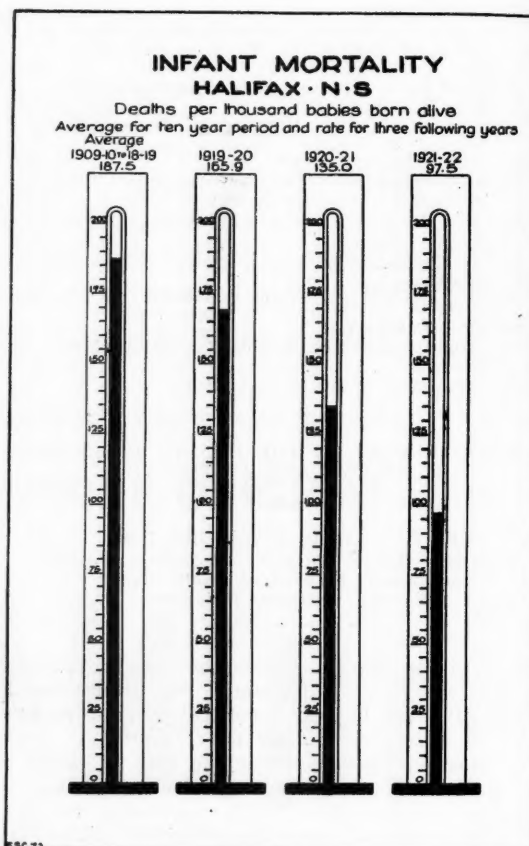
groups with considerable detail. Abstracts of these addresses are given the public press, thus obtaining a wider audience. Data and graphs are used in illustrating contributions.

In attempting to apportion credit for the satisfactory decline in death rates in Halifax a very large share of credit must be given the newer method of approach in public health teaching and the home teaching service of the public health nurses and visiting housekeepers radiating from the health centres. In the judgement of those who have watched the programme carefully, this new type of effort must receive credit for one-half of the lives saved. The other half may be credited to activities and work of the established official agencies, particularly that of the City Health



GRAPH I.

tion along nutrition lines was initiated. This type of educational public health work is being kindly received. Thinking citizens are watching our public health experiment with greater interest and the executive officer and staff are receiving an increasing number of requests to address clubs of men and women and to make contributions to public health literature. These opportunities are always accepted and with the year's statistics portrayed graphically the facts are laid before these



GRAPH II.

Department in improving the milk supply and lessening fly-breeding, the City Engineer's Department for continuously chlorinating the public water supply and the continued work of the public school authorities through the school medical inspector and school dental and nursing services, together with the continuous splendid bedside service of the Victorian Order of Nurses (see Graph II.).

The two latter services, however, had been in

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existence for a number of years without showing a striking reduction in deaths. One may only approximate credit in this sort of work. Judgement formed by individuals with broad health experience is of even greater value in apportioning credit than is the most scientific attempt to estimate values in these matters with figures.

It would be safe to say that the next drop may be credited to pasteurization of all milk and that a still further decline in death rates will follow the cumulative effect of education along the lines of personal and home hygiene. The refinements of a public health campaign will succeed gradually in bringing the death rates a little lower each year for several years at least.

The Dartmouth death rates are almost as insignificant as are the rates in Halifax. Here we have the Health Centre in operation as illustrated in this journal a year ago—a medical staff, two full-time public health nurses and about half-time of a visiting housekeeper.

The division registrar of vital statistics, Mr. J. H. Barnstead, tells us that in the beginning he felt rather dubious about what we expected to accomplish and that he considered the scheme was mostly "hot air" and bluff. Now, however, he is interested in the results of the work as being shown in his office and is convinced, through the fewer number of deaths being reported, that we are accomplishing those things we are working to accomplish. Better, however, than the decline in death rates—gratifying as that may be—is the general improvement in the health and sturdiness of the children, the real future Canadian citizens.

It is hoped when the next year's statistics shall have been compiled that the crude death rate will have gone well below 14‰ and that the infant mortality will have gone below 90‰ babies born alive.

The Registrar of Vital Statistics for the Province of Nova Scotia is arranging to make the statistical year synchronize with the calendar year, as is the custom in the other Provinces of Canada. For this reason the next statistical year will include a fifteen months' period. This will cause a delay of three months in getting the final figures for discussion and presentation and will delay for a period of fifteen months a further progress report.

"PINK DISEASE"—ERYTHROEDEMA.¹

By E. SYDNEY LITTLEJOHN, B.A. (Sydney), M.D., CH.M. (Edinburgh).

Honorary Physician, Royal Alexandra Hospital for Children, Sydney.

I think there is very little doubt that "pink disease" is an infectious disease of the nervous system, analogous to infantile paralysis and lethargic encephalitis and involving especially the vasomotor centres in the medulla and spinal cord. As in the case of these diseases it occurs sporadically and in epidemics. The site of entry of the infection

is in all probability the naso-pharynx. Unlike them, however, it is absolutely confined to infants and young children.

The disease is certainly a clinical entity and always conforms to type. It is characterized in all instances by some at least of a certain definite group of symptoms, though there may be considerable variation in intensity in these symptoms in different patients. A typical example of the disease is quite characteristic and once seen can never be forgotten.

Historical Survey.

The disease was first described by Dr. Swift, of Adelaide,² in 1914 under the name of "erythroedema" and at the Australasian Medical Congress held at Brisbane in 1920 Dr. Jeffreys Wood,³ of Melbourne, stated that he had frequently seen cases of the disease in Melbourne for the past thirty years and that his predecessor at the Children's Hospital, Dr. William Snowball, had recognized the complaint and was in the habit of referring to the patients as the children with the "raw-beef hands and feet."

Dr. Clubbe also has been familiar with the disease in Sydney for the past thirty years and named it the "pink disease" on account of the striking pink appearance of the hands and feet.

From the time of Dr. Swift's paper in 1914 up to 1921 Dr. Wood⁴ states that he and Dr. F. H. Cole had collected notes of forty and fifty-one cases respectively and Field⁵ states that one hundred cases had been reported in America. I myself have seen twenty cases in the past six years, so that the disease is by no means uncommon. Yet it is a most extraordinary fact that until the last two or three years no paper on the subject, with the exception of Dr. Swift's in 1914, has appeared in the medical journals and the disease is not even mentioned by the authors of the latest text-books.

During the last three years many cases have been recorded in America by various writers and last year for the first time two cases were reported in *The British Journal of Children's Diseases*, one by Parkes Weber and one by Thursfield and Paterson. The American writers unfortunately, with the exception of Field⁶ who supports the diagnosis of erythroedema, have all confused the disease with acrodynia. Pink disease is certainly not acrodynia which differs in many points and affects large numbers of adults.

As regards the name of the disease, Swift recognized that his name of "erythroedema" was not satisfactory, as there was no oedema present. Until the pathology of the condition is determined, I think Dr. Clubbe's name of "pink disease" is better, as it indicates the most striking feature and is entirely non-committal.

Symptoms and Signs.

It is astonishing how uniformly the disease keeps to type and how all writers in their descriptions repeat monotonously the same group of symptoms time after time in almost the same words. The only difference is a variation in the intensity of the different symptoms. When the symptoms are well

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on May 11, 1923.

advanced the condition is quite characteristic. The child is generally crying and whining, with an expression of the most utter misery. It seems to dread and resents being touched or disturbed in any way. It holds its head down and frowns with its eyes partly closed or with its arm held across them as if to keep out the light.

If in bed it is frequently seen in either of two characteristic attitudes. It either sits with its head bent forward right down between its knees or gets on its hands and knees and buries its face in the pillow. This photophobia is a very frequent symptom; it appears early and generally persists for some weeks.

The child is extremely fretful and irritable, it often rubs and scratches its body and limbs and picks at its fingers and toes. Sometimes in the extremity of its distressful misery it beats its head, pulls its hair and ears and even bites or scratches at its mother's or nurse's face.

The trunk and limbs are moist with sweat which in many instances is very profuse, and the hands and feet are of a peculiar pink colour and are quite cold and clammy.

The pinkness does not as a rule extend above the wrists and ankles, though occasionally it reaches to a level five or six centimetres proximal to these. It is always symmetrical and is generally an early symptom, appearing in two or three weeks from the onset, though its appearance is sometimes delayed for four or five months. It is pathognomonic.

Often also the tip of the nose, the cheeks and the ears are pink.

There is always some wasting and in severe forms considerable emaciation may be present. There is always also some general muscular wasting and weakness and sometimes the paresis is so marked that the child is unable to sit up or hold its head up. The wasting and muscular weakness are early symptoms.

Complete loss of appetite is another constant and early symptom, as also is insomnia of a most distressing and obstinate character.

As a result of the profuse sweating there is often an extremely irritable miliarial rash on the trunk and limbs, with the formation of small vesicles which rupture and lead to desquamation of the cuticle.

The irritation leads to constant rubbing and scratching and picking at the fingers and toes which causes abrasions and in some instances ulceration from septic infection.

In some patients deep ulceration of the palms, soles and buttocks has occurred and loss of finger and toe nails is by no means rare and may occur repeatedly.

In a case described by Parkes Weber⁽¹⁾ the tips of some of the fingers had been lost by ulceration or gangrene.

None of my patients exhibited these severe skin lesions or had any loss of finger or toe nails. There was merely a desquamation of the epidermis especially noticeable between the fingers and toes. Probably climatic conditions are a factor; one

would certainly expect these lesions to be more marked in a cold climate. Two of my patients when beginning to convalesce, exhibited a few large scattered vesicles over the trunk.

There is frequently present some enlargement of the axillary and inguinal glands. Some of the American writers in fact state that all the lymphatic glands are constantly enlarged.

Some degree of stomatitis is of frequent occurrence and Wood,⁽²⁾ Parkes Weber⁽³⁾ and others describe cases in which there was severe gingivitis leading to ulceration and necrosis of the gums with loosening and falling out of the teeth. I have so far had no experience of these severe lesions in the mouth.

Many patients in the early stages exhibit a nasal catarrh and there is often a recent history of "a cold in the head" or a "running nose." Some American writers especially lay stress on this point and state that the disease is constantly preceded by a naso-pharyngitis and that the naso-pharynx is probably the site of inoculation of the disease. Some of these writers also state that the deep reflexes are always diminished and sometimes absent and that cutaneous sensibility to pin-pricks is sometimes lost.

The alimentary system does not appear to be involved in the disease except for the constant presence of anorexia. There is no vomiting and the bowels are generally normal in action or constipated and occasionally loose. The urine is always scanty owing to the excessive sweating and the small amount of food taken, but is otherwise normal. Brown, Courtney and MacLachlan⁽⁴⁾ record a constant abnormally high excretion of nitrogen.

The temperature is very variable; usually it is normal with occasional slight rises for a few days. None of Dr. Wood's patients had a temperature above 37.8° C. unless complications were present. In America very few patients had a temperature above 38.9° C. though in one or two instances it reached 39.4° C. and 40° C.

The blood was carefully investigated by Brown, Courtney and MacLachlan⁽⁴⁾ who found that there was frequently a leucocytosis of from 12,000 to 24,000 cells per cubic millimetre and not infrequently a mild degree of secondary anaemia. Otherwise nothing abnormal was noted.

I have endeavoured to give as complete a description as possible of the features of the disease at the risk perhaps of over-elaboration of unessential details. Perhaps it would be advisable to recapitulate shortly the essential features.

The outstanding and constant characteristics of the disease are the peculiar pink, cold and clammy hands and feet, the miserable fretfulness and facies of utter misery, photophobia, insomnia, anorexia, excessive sweating and wasting and muscular paresis.

Clinical Course.

After the persistence of the symptoms for at least several weeks and often months I have found the first signs of improvement to be a gradual cessation of the miserable fretfulness and sweating and a

return of appetite, sleep and muscular power. The last sign to disappear was always the pinkness of the hands and feet. The disease is self-limited and simply seems to wear itself out.

As a rule when convalescence has once begun, it has progressed slowly and steadily towards complete recovery, but two or three of my patients had mild relapses. These were evidenced by an increase in the fretfulness and pinkness and sometimes a slight rise of temperature, all of which lasted for a few days.

Recovery is complete; there is no record of any sequela and no instance of a recurrence of the disease has been reported. I have seen two of my patients after an interval of three and four years had elapsed and both were perfectly normal, healthy children.

There is a considerable variation in the degree of severity in the different children; in some it is very much milder than in others.

The mildest case I have seen was in a boy of two and a half years of age, who was admitted to the hospital with a history of extreme fretfulness, wasting, loss of appetite and sleeplessness of two or three weeks' duration. He had photophobia, the typical miserable facies, a clammy, irritable skin, and whined and cried when he was approached. On several occasions I observed him sitting in bed with his head between his knees or on his elbows and knees with his face buried in the pillow. After a week or two he developed a pink nose and a little later pink hands and feet of mild degree. A fortnight after this he began to improve and left the hospital practically well after an illness of about ten weeks.

Prognosis.

The prognosis is good as regards life. The great majority of patients make a complete recovery. The mortality is probably about 4% or 5%. Wood and Cole⁽¹⁾ had five deaths among ninety-one children, I had two among twenty and Weston⁽²⁾ two among eight. In the fatal cases death was nearly always due to the supervention of broncho-pneumonia.

Duration.

In regard to the duration of the disease it may be stated that it always lasts many weeks. The shortest duration reported is two months and the longest eighteen months. Wood⁽³⁾ found the duration to be shorter in young babies than in older children.

Pathogenesis.

Innumerable investigations have been carried out in the endeavour to throw some light on the causation of the disease, but with practically no result.

Wassermann and tuberculin tests, cultures and examinations of blood, spinal fluid, naso-pharyngeal discharge, urine and feces⁽⁴⁾ and *post mortem* examinations have all failed to throw any light on the subject, except in one case reported by Wood and one reported by Byfield. In the case reported by Wood the *Bacillus dysenteriae* of Shiga type was found in the feces and in that reported by Byfield⁽⁵⁾ tuberculosis was also present, and *post mortem* examination "showed involvement

of an occasional anterior horn-cell of the spinal cord, gliosis about the central canal and oedema of the sensory roots." Quite recently, however, Vipond has discovered a diplococcus in the enlarged lymphatic glands and this may lead to some important results.

Careful investigations into the diet have proved conclusively that the condition is not a food-deficiency disease. Many of the patients have been breast-fed babies whose mothers were well fed, and no evidence of defective dieting has been found. Neither has the most careful dieting any influence whatever on the course of the disease.

Snowball's belief that the disease followed severe attacks of gastro-enteritis is not borne out by the experience of any other writer on the subject.

In regard to sex-incidence, it is found that boys and girls are equally affected. In regard to age-incidence an extraordinary feature is noticed. The disease is absolutely confined to infants and young children between the ages of three and a half months and five years. Only one child was over four years and the great majority were under two years of age.

The youngest affected child of three and a half months is recorded by Wood⁽⁶⁾ and the oldest, of five years, by Weston⁽⁷⁾ of Columbia.

The disease occurs both in small epidemics and sporadically and there is distinct evidence of a seasonal incidence in the epidemics.

Brown, Courtney and MacLachlan⁽⁸⁾ state that the illness of none of their patients commenced in summer and most of them in May and June.

My experience has been that the occurrence of pink disease has nearly always been coincident with that of infantile paralysis which is most frequent in late summer and in the autumn. There have often been two or three patients affected with the disease in the wards at the same time and on one occasion there were six. The present autumn is a further example of the seasonal coincidence of the two diseases.

At first it appeared to me that pink disease was merely a variety of infantile paralysis with special incidence on the vaso-motor centres, but I think if this were so there would certainly be some combined cases and this does not occur. Pink disease always conforms to type.

No doubt the vast majority of children are immune to the disease to a far greater extent than is the case with infantile paralysis and *encephalitis lethargica*.

As regards the pinkness of the hands and feet, this is frequently referred to as an oedema, or "rash," or "erythematous eruption." There is no oedema whatever and it is not an erythematous eruption or rash of any description.

The condition is purely one of vaso-motor paralysis, slight pressure of the finger causes absolute blanching and the colour returns only very slowly when the pressure is removed.

Vipond⁽⁹⁾ the Senior Physician to the Montreal Children's Hospital, expresses the opinion that it is due to a vasomotor neurosis, with a contracted

state of the arterioles and a dilatation of the venules, but I think if this were so, there would be a condition of ischaemia and pallor and not of venous hyperaemia.

I think the peculiar pink colour is due to the blood in the capillaries and venules being much more arterial than usual, owing to the vascular dilatation and consequent lack of resistance to the blood flow from arteries to veins.

The evidence that pink disease is an infection, analogous to infantile paralysis, involving the nervous system and with special incidence on the vasomotor centres, is in my opinion most convincing.

The occurrence of the disease in epidemic and sporadic form, its self-limitation, its seasonal incidence, the presence of fever and the leucocytosis all suggest strongly an infection.

Further, the frequent presence of a nasal catarrh at the outset and the fact that in nearly all the fatal cases death has resulted from bronchopneumonia, point to the respiratory tract as being the site of entry.

The excessive sweating, the vasomotor paralysis, the muscular paresis and wasting indicate involvement of the nervous system with special incidence on the vasomotor centres. The peculiar selective incidence on the vasomotor centres is quite comparable to that which occurs in infantile paralysis and *encephalitis lethargica* in regard to motor centres.

Brown, Courtney and MacLachlan, Field, Byfield and Vipond all favour the view that the disease is an infection. Vipond⁽¹⁾ acting on this conviction, withdrew a little fluid with aseptic precautions from one of the enlarged lymphatic glands and inoculated a fresh tube of human blood serum. After about forty-eight to sixty hours, though there was no growth on the blood serum, the water of condensation was seen to be slightly opaque and under the microscope was found to contain diplococci staining by the Gram method, which on being transplanted to human blood serum yielded a strong growth. From this growth he prepared a vaccine to which I shall refer later.

Diagnosis.

Pink disease has been much confused in America with acrodynia and in some instances with pellagra. Acrodynia or epidemic erythema is a disease largely affecting adults and is characterized by an erythematous dermatitis especially affecting the palms and soles and followed by pigmentation. It is also followed by vomiting and diarrhoea and frequently by cramps and spasms of the muscles and sometimes by paralysis of the legs and general anasarca. It generally runs a course of from two to four weeks and recurrent attacks are not uncommon.

Pellagra is also a disease largely affecting adults. It is a food-poisoning disease, due to infected maize. It is characterized by an erythematous eruption and is followed by a sharply defined pigmentation on the parts exposed to the sun. There are also gastro-intestinal symptoms, mental symptoms ad-

vancing to melancholia and acute mania and various spinal symptoms. It is a progressive disease with recurrent attacks every spring.

Treatment.

Treatment unfortunately is a subject on which there is very little to say. Nothing has hitherto been found to affect the course of the disease which simply seems to wear itself out.

The child should be left undisturbed as much as possible. Wood recommends open air treatment as promoting sleep and appetite. For the sweating and irritation of the skin he recommends rubbing the body with rectified spirit and dusting with zinc and starch powder. For the lesions of the fingers and toes he states that painting with tincture of iodine, if necessary diluted with an equal quantity of rectified spirit, gives most relief.

Calamine lotion with some *liquor plumbi subacetatis* added also seems to relieve the skin irritation considerably.

Some patients have apparently derived benefit in regard to the excessive sweating from the subcutaneous administration of atropine.

The insomnia is a most difficult condition to deal with, no drugs seem to have any effect.

A recent interesting report from America, however, affords some prospect for hope in regard to the treatment of the disease. Vipond reports that he treated two patients with a vaccine prepared from the diplococcus discovered in the lymphatic glands. He administered subcutaneously to each patient, as a primary dose, one cubic centimetre of this vaccine which contained 500 million diplococci. The reaction was slight and in three days both patients showed a definite improvement. He then injected 1.5 cubic centimetres and in three days the hands and feet were practically normal. After a third dose one patient was practically cured and the other very much improved. He found that the lower extremities recovered much more rapidly than the upper. This sounds very encouraging and I shall certainly try this treatment at the next opportunity.

In regard to diet Wood recommends a diet of whole raw milk, unless the child is on the breast. In this case breast-feeding should certainly be continued. Bengers' food also often proves useful as an adjuvant.

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INJECTIONS OF SALINE SOLUTION IN
GASTRO-ENTERITIS.⁽¹⁾

BY MARGARET HARPER, M.B., Ch.M. (SYDNEY)

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for Children, Sydney.

The administration of saline solution to dehydrated infants has long been recognized as a helpful method of treatment.

Comparison of Methods of Administering
Saline Solution.

The methods which have hitherto been adopted, have many disadvantages. When given by mouth vomiting and loss of appetite render the method impracticable in the majority of instances. When saline solution is given by the bowel to infants, it is seldom retained. Intravenous administration of saline solution is impracticable if the fontanelle is closed. In any case it is often difficult and cannot be used frequently. The subcutaneous method is painful and causes great discomfort. Only very small quantities can be injected at a time and if the child is very ill, the solution will not be absorbed. The additional pain and discomfort to an infant who is already suffering, are great disadvantages and discourage the medical attendant from repeating the injection as frequently as the condition of the child really demands.

The Intraperitoneal Method.

Injection by the intraperitoneal method is easy to perform and causes little or no disturbance. Amounts varying from 170 to 230 cubic centimetres (six to eight ounces) can be injected two or three times in the twenty-four hours. The absorption is rapid and complete even in a moribund infant. The improvement in the condition of the child is usually rapid and striking. At the beginning of last summer when the shelters were opened at the Royal Alexandra Hospital for Children for the reception of patients with gastro-enteritis, the intraperitoneal method of administering saline solution was adopted. Naturally, in spite of favourable reports from other centres, I felt rather uncertain as to the harmlessness of the procedure. However, any doubts I may have had were soon put to rest by the clinical results obtained and also by the examination after death of the peritoneal cavities of those patients who died. Ten *post mortem* examinations were carried out on infants who died after having received saline solution by this route. In none of them was there any sign of damage to the tissues nor of infection. One of the patients who came to autopsy, had received ten injections and no sign of inflammation nor of injury was found in the peritoneal cavity. Moreover, two hours before death an injection of 170 cubic centimetres had been given and only 30 cubic centimetres of this were recovered from the peritoneal cavity after death.

Indications for Use.

The indications for the use of intraperitoneal injections of saline solution are the usual signs of dehydration and collapse, such as sunken eyes, depressed fontanelle, loss of elasticity of the skin and subcutaneous tissues. The only contra-indication seems to be a distended abdomen. In these circumstances there may be danger of puncturing the bowel. The fluid, moreover, is not so readily absorbed when distension is present.

Method of Administration.

In administering saline solution by the intraperitoneal route a fine, somewhat blunt needle with a short bevel is used. This is inserted just below the umbilicus in the middle line. Care must be taken to ascertain that the bladder is empty. One hundred and seventy to two hundred and thirty cubic centimetres are given at a time. The fluid is allowed to flow in slowly under the influence of gravity. The time occupied by this is about fifteen to twenty minutes. Strict aseptic precautions are of course necessary in regard to the patient's skin, the apparatus and the operator's hands.

The solutions used by this method have been normal saline solution and normal saline solution together with 5% glucose. Antidysenteric serum has also been administered intraperitoneally as occasion has arisen. Improvement in the condition of the children is usually definite. Those members of the staff of this hospital who have had these children under observation, are persuaded that this method of treatment has tided many of them over periods of collapse which would have proved fatal.

Conclusion.

In conclusion, I should like to mention the injection of citrated blood by the intraperitoneal route. In a recent issue of the *American Journal of Diseases of Children* Siperstein reports experimental and clinical studies of this method of transfusion. His conclusions are that the intraperitoneal injection of freshly citrated blood acts as a true transfusion and not as the absorption of a nutrient material, and that except in cases of emergency when the blood must be introduced directly into the circulation the intraperitoneal transfusion of citrated blood is a therapeutic procedure of possible merit. It can apparently be used when other routes are unavailable or impracticable. It is possible also that the intraperitoneal administration of citrated blood may be a useful method of treatment in gastro-enteritis.

HAY FEVER AND ASTHMA.

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That hay fever and asthma are associated with sensitization to foreign proteins and are usually anaphylactic phenomena is a conception which has considerably changed the procedure adopted in the

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on May 11, 1923.

diagnosis and treatment of these conditions. This brief paper is a summary of the application of these conceptions to the investigation and in some cases the treatment of two hundred and ten patients seen in private practice, who were suffering from hay fever and asthma. Those patients who did not react to cutaneous tests, were in most instances treated by the practitioners from whom they were referred. Many details in this preliminary communication have been omitted, but will be discussed in a future paper. Since anaphylaxis plays such an important rôle in hay fever and asthma a brief review of its main features will now be given.

Anaphylaxis.

The meaning of the term anaphylaxis is perhaps most readily conveyed by a description of an experiment involving such a condition.

If at intervals of three days a guinea pig be given injections of proteins foreign to the animal, *exempli gratia*, hen's egg albumin, the blood serum of the guinea pig will eventually develop the property of causing a precipitate to occur when the serum is mixed with the egg albumin.

A precipitin is found to be present in the animal's blood and has been developed as an immunological response to the injection of the albumin.

If, instead of an interval of three days between the first (sensitizing) and second (toxic) injections, the period is increased to ten or more days, the preliminary injection causes the animal to become sensitized (anaphylactic) and the second injection will be followed by remarkable symptoms. The chief of these is intense dyspnoea caused by contraction of the bronchial musculature and this may be so great as to cause partial asphyxia and even death.

The symptoms following the second (toxic) injection constitute the phenomenon of anaphylaxis.

To explain anaphylaxis some authorities postulate a toxin (anaphylatoxin) as being formed in the blood by the action of specific enzymes developed in response to previous injections of antigen. It is supposed that these enzymes disintegrate the antigen subsequently injected and that anaphylatoxin is the product of the disintegration.

However, if a female guinea pig be given a sensitizing injection of egg albumin and two weeks later the uterus be removed and its vessels perfused thoroughly with physiological saline solution so as to remove all traces of blood and if it be then suspended in warm oxygenated Ringer's solution, immediate contraction of the uterus, which can be graphically recorded, will occur on the addition of a little egg albumin to the fluid.

Dale has pointed out that this experiment is proof that the contraction of the uterus is due to an interaction between the antigen (albumin) and antibody in the tissue cells and is not due to the formation of a toxic substance (anaphylatoxin) in the blood, for this fluid has been washed away by the preliminary perfusion. The contraction of the uterus will be maximal if sufficient antigen be added to the Ringer's solution, so that on the addi-

tion of more antigen no subsequent contractions will occur. In other words, the uterus has been completely desensitized in one stage and with profound disturbance of its normal tone.

On the other hand, if insufficient antigen be added to the Ringer's solution to obtain a maximal contraction, then subsequent additions of the egg albumin will give further contractions, depending upon the amount added, until complete desensitization has occurred. This constitutes desensitizing in stages and is the basis of the desensitization of patients suffering from hay fever and asthma by specific protein injections.

As just stated, Dale regards a sensitized (anaphylactic) guinea pig as having the antibody fixed in the tissue cells and it is here that the interaction between antigen and antibody which may be in the nature of a precipitin reaction, occurs with the accompanying anaphylactic phenomena such as contraction of bronchial tubes, uterus and other unstriated muscle.

The immunity of the guinea pig injected at frequent short intervals is due to the presence of an antibody in the blood and as long as it is present no anaphylactic symptoms will occur, because the antigen is acted on in the blood before it can reach the tissues and cause profound disturbance.

We may then conceive of a hay fever patient sensitized to pollen as having antibody fixed in the tissue cells but not free in the blood. Pollen extract injected hypodermically probably interacts with this fixed tissue antibody, gradually diminishes its amount and so desensitizes the person, just as the guinea pig's uterus was desensitized by adding albumin to the Ringer's solution in a series of small quantities. If a very large injection be given to a sensitized patient, profound reaction may occur with intense dyspnoea. Such a reaction corresponds to the severe reaction occurring in the sensitized guinea pig's uterus when one large quantity of antigen is added to the Ringer's solution.

Similar sensitization to horse serum explains the occasional deaths reported in the literature following the injection of horse serum for therapeutic purposes. As a result of a series of pollen injections it seems probable that antibody may be eventually present in the blood, so that the patient is not only desensitized, but also has been rendered immune for some time to further inhalation of pollen. The extent of this immunity varies considerably.

The anaphylactic phenomena described are extraordinarily specific, for example, an animal sensitized to horse serum will react when subsequently injected with horse serum, but not at all with cat serum or dog serum.

Similarly patients sensitized to the dandruff of horses may not be in the least sensitized to cat dandruff, or if sensitized to rose pollen not sensitized to cape weed pollen.

Even an animal sensitized to hen's egg albumin will not be sensitized in the same degree to duck's

egg albumin and this suggests that these two albumins are chemically distinct. That this is so, has recently been proved by special biochemical methods involving racemization and hydrolysis.

Only proteins in an unaltered or slightly hydrolyzed state are capable of acting as antigens. Proteoses and peptones cannot act as antigens, but may have some useful action in non-specific desensitization. Simple molecules, such as acetyl-salicylic acid, cannot possibly act as true antigens and in the event of a patient showing anaphylactoid symptoms after taking this drug, the explanation possibly may be that acetyl-salicylic acid given on a previous occasion has formed a combination with the proteins of the body. This new combination constitutes a foreign complex and induces the formation of an antibody and it is this protein complex which has sensitized the patient. The subsequent ingestion of the drug causes the formation of more of the foreign protein complex and this interacts with the specific antibody formed previously and fixed in the tissue cells and thus produces anaphylactoid symptoms.

Cutaneous Tests.

Chandler Walker and other investigators have shown that in persons sensitized to a foreign protein, such as rose pollen protein, the application of this protein to a small cutaneous cut about 0.3 centimetre ($\frac{1}{8}$ inch) long will give rise to a local reaction which takes the form of a wheal with a varying degree of erythema. The solvent used for the protein is a decinormal solution of caustic soda and the tests are usually performed on the forearm where about twelve tests can be carried out simultaneously. Care should be taken in preparing the proteins not to subject them to high temperatures or to the action of chemicals which would tend to alter the constitution of the protein molecule. Four classes of such proteins are used for cutaneous tests, those of pollens, foods, animal dandruff and bacteria.

For the diagnosis of the true hay fever only pollens are required, but for the investigation of asthma and pseudo-hay fever or sneezing throughout the year all four groups are necessary.

The preparation of these various antigens will not be discussed in this paper, but in a future communication reference will be made to this very important problem.

Hay Fever.

Typical hay fever with intense irritation of the nose and eyes, rhinorrhœa and sneezing has a definite seasonal incidence which is most marked in the spring in Victoria and less so in the autumn.

Cutaneous tests in the writer's experience are of the greatest value in determining the nature of the pollens causing such attacks.

Of ninety-two patients with such seasonal symptoms who were subjected to cutaneous tests, eighty-five, or 92%, showed positive reactions.

Such tests demonstrate that by far the commonest cause of this condition is the pollen of the natural order *Gramineæ* (grasses). The most important members of this order, causing symptoms

were *Dactylis glomerata* (cocksfoot), *Lolium perenne* (rye grass), *Bromus mollis* (prairie grass) and *Holcus lanatus* (Yorkshire fog). Less important members are *Poa annua*, *Poa caespitosa*, *Phalaris canariensis*.

The botanical order *Compositæ* is also responsible for much hay fever. The most important members are *Cryptostemma calendulaceum* (cape weed) in the spring and dahlia, sunflower and cosmos in the autumn. A patient sensitized to a member of the *Compositæ*, such as cape weed pollen, may show sensitization to other members of this order as dahlia or cosmos, but this is not necessarily so, for positive tests may be obtained for cape weed and not for cosmos or on the other hand for cosmos and not for cape weed.

Frequently patients were sensitized to both *Gramineæ* and *Compositæ*.

Less frequent causes of hay fever are the pollen of roses, sweet pea and Iceland poppy. Particularly interesting is the fact that wattle pollen and pine tree pollen very seldom cause symptoms of hay fever.

Public opinion usually condemns wattle, probably owing to the profusion of its flowers. Persons sneezing in the presence of wattle are usually sensitized to some other pollen and the extremely irritable nasal mucous encumbrance is irritated mechanically and not chemically by the wattle pollen.

Treatment of Hay Fever.

Any pathological nasal condition apart from the irritation of the pollens should be attended to by a rhinologist. Sub-mucous cauterization apparently improves a certain number of cases, but an attempt to establish immunity against the condition by means of specific pollen extracts should be made in every case. Of sixty-two patients treated by specific pollen extracts, the composition of which had been indicated by the cutaneous tests, forty-seven were cured or greatly relieved, *id est* 76%. Partial relief was obtained by 19% and no benefit was derived by 5%. About ten injections were usually given, commencing with a solution of 1 in 20,000 and gradually increasing the dose every third or fourth day till a concentration of 1 in 20 was reached. These solutions were all made without the aid of heat, rendered sterile by being passed through a Pasteur Chamberland filter and preserved with a 0.35% solution of "Tricresol."

The increase of strength of injection is determined by the local and sometimes general reaction of the patient to the previous dose. As a rule much greater local reactions can occur with pollen extracts without general disturbance than in the case of bacterial vaccines. However, this is not always so, as swelling of the lips, laryngeal oedema and dyspnoea have occurred in the writer's experience without any local reaction whatever.

Great care must be exercised in the use of the concentrated solutions. Acute dyspnoea with generalized urticaria has occurred within a few minutes of such an injection, but was promptly relieved by

ten minims of adrenalin (1 in 1,000) given hypodermically.

The term hay fever should be restricted to the condition in which the symptoms are caused by chemical sensitization to pollens.

Mention should be made of a certain number of patients whose sneezing is more or less continuous throughout the year or occurs at very irregular intervals. Such patients, although described as having hay fever, may react to a cutaneous test to animal dandruff or food, but much more frequently fail to respond to any cutaneous tests.

Mechanical stimulation of a very irritable nasal mucous membrane by dust or thermal stimulation by hot or cold air may cause sneezing. This condition is really pseudo-hay fever and must not be confused with the pollen irritation of true hay fever. Some true hay fever patients, however, may have non-seasonal sneezing.

It may be of interest to relate the histories of two patients suffering from hay fever, one of whom responded readily to treatment, while the other failed to do so.

Case I.—Mr. A., aged forty-five years, had suffered from typical hay fever of great severity for seventeen years. Its annual duration had been from September to January. Cutaneous tests revealed sensitization to orders *Compositae* and *Gramineae*, especially the pollens of cape weed, cocksfoot and rye grass. An extract of these pollens with some other members of the same orders was used for desensitization.

The solutions used were 1 in 20,000; 1 in 2,000; 1 in 200; and 1 in 20. The patient was first seen on September 29, 1922, having had hay fever for two weeks.

Desensitization was commenced on October 2, 1922. Injections were given twice a week, the first being 0.3 cubic centimetre (5 minims) of the 1 in 20,000 solution. This was gradually increased till 0.24 cubic centimetre (4 minims) of the 1 in 20 solution was given. After the fourth injection the patient was completely free of hay fever and had no recurrence during the whole of the season. Thirteen injections were given at the patient's request in order to be certain of immunity.

This case illustrates the great value of specific pollen desensitization in an uncomplicated case of hay fever.

Case II.—Miss P., aged twenty-six years, was a very frail, anæmic girl with a family history of syphilis and many years of ill-health. Hay fever was of ten months' duration but not of a severe type. The maximum incidence was from September to January, but it continued more or less throughout the year. Changes of temperature and inhalation of dust markedly aggravated the condition.

Cutaneous tests revealed sensitization to members of the order *gramineae*, but not of a marked character. Sixteen injections of pollen extract failed to relieve her and simultaneous general medical treatment by another practitioner was also ineffective.

The report of a nose and throat specialist was that he could find nothing abnormal apart from the congested mucous membrane.

This case is quoted to illustrate a somewhat rare type of person who apparently owing to general poor physical condition could not produce antibody in response to pollen extract injections.

Asthma.

Many clinicians maintain that asthma is mainly of neurogenic origin. That a certain percentage of cases have an underlying nervous basis is not denied,

but there is now indisputable evidence that many asthmatics are sensitized to certain proteins and that these proteins are the cause of their symptoms. Such proteins may be inhaled as in the case of pollen proteins and animal dandruff, ingested as food proteins or absorbed from septic foci as bacterial protein. The writer has about one hundred proteins for use in skin tests, but as a rule not more than twenty-four are used on any one patient.

A careful history is the first essential in the investigation of an asthmatic. Seasonal symptoms may suggest pollen irritation; association with animals, *exempli gratia*, horses, animal sensitization, or the ingestion of a certain food may be known to cause asthma. A thorough physical examination to detect any septic foci is always essential and the cooperation of a nose and throat specialist is frequently necessary. A suppurating antrum or sphenoidal sinus, septic tonsils, deviated septum or enlarged turbinates were of frequent occurrence in this series and the operative treatment of these conditions is often of the greatest importance.

Even alimentary, gall bladder and other infections have to be considered. Of ninety-seven patients with symptoms of asthma, forty-eight gave positive cutaneous tests, *id est*, 49%. Walker, in a large series of asthma patients, obtained 48% of cutaneous reactions. The reasons for not obtaining a higher percentage of cutaneous reactions may be:

- (i) The correct proteins were not used for the tests.
- (ii) The proteins may have had their properties altered in the process of preparation.
- (iii) Proteins slightly hydrolyzed in the alimentary canal may be responsible for the asthma and these would not be identical with those used in the cutaneous tests.
- (iv) The tests may have been performed at a time when the patient was temporarily desensitized owing to a previous attack of asthma. Of this the writer has had conclusive proof.
- (v) Patients may not be anaphylactic to any protein, but the asthmatic symptoms may be due to the action of bacterial toxins in contra-distinction to bacterial protein or even to some intermediate product of metabolism. The symptoms accompanying asthmatic bronchitis may have such an origin and positive cutaneous would not be obtained.

Multi-sensitization was of frequent occurrence in this series. By this is meant that the patient gave positive tests to several different types of protein.

The pollen of *Gramineae* and *Compositae* was the most frequent causative factor of asthma in the forty-eight patients who gave positive cutaneous tests, seven patients were sensitive to horse dandruff and four to cat dandruff. Of the foods, egg albumin, fish, oatmeal, pineapple and banana were responsible for positive reactions. Tests with various micro-organisms, such as *Staphylococcus*

pyogenes aureus, *Staphylococcus pyogenes albus*, *Streptococcus viridans*, *Streptococcus hemolyticus*, *Streptococcus non-hemolyticus* and pneumococcus almost uniformly failed to produce a reaction. These micro-organisms were prepared according to the method described by Chandler Walker who claims to obtain a moderate percentage of positive cutaneous tests; but Sandford in the Mayo Clinic tested three hundred and sixty-five patients with *Staphylococcus aureus* and *Staphylococcus albus* and failed to produce any reactions.

It is probable that the exact strain of organism causing the asthma in an individual patient may be required to obtain a reaction. If autogenous cultures were obtained and the chief varieties of organisms were tested cutaneously, more positive results might be found.

Treatment of Asthma.

It must be clearly understood that in this paper treatment as indicated by cutaneous reactions is alone considered. Such treatment consisted of injections of pollen extracts, protein of horse and cat dandruff, specific bacterial vaccines, the elimination of certain articles of food from the diet according to the nature of the cutaneous reactions and even such simple measures as the removal of cats from the homes of patients who were cat sensitized. Now while specific measures are to be used, if possible non-specific treatment, *exempli gratia*, the use of potassium iodide, stramonium, adrenalin, atropine, morphine and non-specific bacterial vaccines may be of the greatest value in treating patients not giving a cutaneous reaction and may be used as an adjunct to specific measures for some patients whose cutaneous tests yielded positive results.

Such treatment will be discussed in a future paper. Appropriate treatment of pathological nasal and other related conditions by a nose and throat specialist is frequently of great assistance. The present remarks, however, are confined to the treatment of forty patients by specific measures as indicated above. Of the patients treated twenty-six were cured or markedly relieved, *id est*, 65%. Relief was obtained by 22.5% and 12.5% were not benefited.

The majority of these forty patients had experienced many years of non-specific treatment with only slight relief or no improvement.

The two following case histories are examples of successful treatment of asthma by specific desensitization.

Case III.—Mrs. L., aged thirty years, had suffered from hay fever since childhood in recurring periods from September to March. Asthma of most extraordinary severity and continuity commenced in July, 1920.

Medical treatment proved quite ineffective. In April, 1921, a nose and throat specialist removed suppurating tonsils, resected the septum and operated on both suppurating antra. Some improvement followed, but the asthma was still severe and the rhinorrhœa most distressing.

The writer first saw her in January, 1922, when cutaneous tests revealed sensitization to cape weed, dahlia, sunflower and to a less extent rye grass and cocksfoot.

Thirty injections of the extracts of these pollens caused the asthma entirely to disappear and the patient has been perfectly well during the last fifteen months.

This case shows that the operative removal of septic foci alone may not cure asthma if the patient

has also pollen sensitization. The converse, namely, that pollen injections may fail if septic foci are allowed to remain, is frequently true.

The results of the pollen injections in this case were most remarkable. The patient was so highly sensitized to pollens that the increase in strength of each injection had to be very small, hence the large number of injections necessary to complete desensitization.

Case IV.—Mr. M., aged thirty-five years, lived in northern Victoria and had much to do with horses which seemed to aggravate his symptoms. His asthma which dated from 1915 with marked exacerbations in the spring, was accompanied by hay fever.

Prior to his seeing the writer in October, 1921, the patient had had prolonged medicinal treatment. He had also undergone tonsillectomy, resection of his septum and turbinates, but only with partial relief of his asthma.

Cutaneous tests revealed sensitization to horse dandruff, and the pollens of *Compositæ*, especially cape weed.

Ten injections of horse alkali metaprotein (prepared from horse dandruff) and of extracts of the appropriate pollens resulted in complete relief of his symptoms and enabled him to work with horses without distress. The following season he was so free from symptoms that he did not report for prophylactic injections as advised.

This case is an instance of a patient sensitized to pollens and horse dandruff whose asthma was complicated by the presence of septic foci.

The Value of Cutaneous Tests.

Before concluding this paper, a brief review of the value of cutaneous tests in the diagnosis of hay fever and asthma may be of interest.

In the diagnosis of hay fever such tests are of the utmost value, as in the present series 92% of patients gave cutaneous reactions and thus enabled the subsequent treatment to be changed from a practice of mere empiricism to an exhibition of sound scientific therapeutics.

If a representative collection of pollens be used in the cutaneous tests, failure to obtain a reaction usually indicates that the symptoms are not those of hay fever, but probably pseudo-hay fever, a condition discussed earlier in this paper.

In the diagnosis of asthma a test which in a few minutes may indicate the true causes of the condition, is undeniably of great value, for in cases of asthma due to animal dandruff or food protein the elimination of those factors may be the only treatment required.

Occasionally, however, a moderate reaction may be given by some protein, *exempli gratia*, a food protein which, if eaten by the individual, may not give rise to any clinical symptoms. Such a paradox is only an occasional occurrence and does not detract from the great value of the vast majority of cutaneous reactions.

With regard to failure to react to cutaneous tests in asthma the investigations here reported indicate that much importance may be attached to such tests with pollens and animal dandruff, less importance in the case of foods and little reliance on failure to obtain a reaction to tests with the protein of micro-organisms.

Summary.

1. Cutaneous reactions to pollens were obtained in 92% of patients suffering from seasonal hay fever.

2. The chief pollens causing hay fever in Victoria are members of the botanical orders *Gramineæ* and *Compositæ*, cocksfoot, rye grass, prairie grass, cape weed, dahlia and cosmos being the main causes of the condition.

3. Specific treatment by pollen extracts resulted in seasonal cures or great relief in 76% of patients, partial relief in 19%, while no relief was obtained by 5%.

4. Cutaneous reactions were obtained in 49% of patients suffering from asthma.

5. These reactions were chiefly induced by pollens of the natural orders *Gramineæ* and *Compositæ*, dandruff of horses and cats and to a less extent the protein of foods.

6. Bacterial protein gave but few reactions.

7. Specific treatment suggested by the cutaneous tests cured or greatly relieved 65% of the patients, relieved 22.5% and failed in regard to 12.5%.

8. Of 112 positive results from cutaneous tests by pollens of *Gramineæ* and *Compositæ*, 61 were due to *Gramineæ*, 11 to *Compositæ* and 40 to both *Gramineæ* and *Compositæ*.

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Reports of Cases.

TUBERCULOSIS OF THE SUPRARENAL GLANDS IN TUBERCULOUS PERITONITIS.¹

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Clinical History.

T.H., MALE, aged 21 years, was admitted to the Adelaide Hospital on December 12, 1921, complaining of a progressive swelling of the abdomen of three weeks' duration.

¹ Read at a meeting of the South Australian Branch of the British Medical Association on April 26, 1923.

There was no pain, but slight soreness was occasionally felt in the epigastrium. No pain or vomiting occurred after meals. No cough, dyspnoea or other abnormal symptom was present. The patient was a well-nourished young man, of a fair complexion and with a marked malar flush. Temperature, pulse and respiration were normal. Nothing abnormal could be detected in the heart or lungs. The abdomen was very distended, measuring 0.95 metre (38 inches) in circumference. The superficial veins were dilated. The liver dullness extended high up into the axilla. Fluid was drawn off from the peritoneal cavity after which the abdomen could be examined moderately well, but no further abnormality was detected.

After a few weeks the patient left the hospital at his own request, but returned at the end of July, 1922, in the condition above described. X-ray examination showed the diaphragm to be raised considerably on both sides, but there was no irregularity in the shadow of the liver. The cell count of the ascitic fluid showed a few red cells and a lesser number of polymorpho-nuclear leucocytes, small lymphocytes and large epithelial cells comprising over 90% of the cells. Esbach's test applied to the ascitic fluid showed it to contain 2.4% of albumin.

A blood count showed the red cells to number 6,280,000 per cubic millimetre and the white cells 6,500. The differential leucocyte count was as follows:

Polymorpho-nuclear leucocytes	..	..	54%
Small mononuclear leucocytes	..	..	42%
Large mononuclear leucocytes	..	..	6%
Eosinophile leucocytes	..	..	1%

The heart, lungs and urine were normal. The abdomen was still as distended as before. The pulse was quite regular and normal.

Dr. Mainwaring opened the abdomen on August 21, 1922, by a sub-umbilical incision, giving vent to a large quantity of ascitic fluid. The serous surface of the intestine was covered with milillary tubercles. The patient's convalescence was uninterrupted and he was discharged at the end of September, 1922, feeling well, though there was still some fluid in the abdomen.

He continued to put on weight until March 20, 1923, when he had an attack of pain in the stomach, which was more or less continuous but with occasional acute exacerbations. He was only able to retain milk and egg flips as all other food was vomited fifteen minutes after taking it. He was rolling about the bed in very obvious distress and had a drawn and anxious expression. The pulse rate was ninety-six, it was regular but of small volume and low tension. Nothing abnormal was detected in the chest. Liver dullness extended from the sixth rib to the costal margin. The abdomen was very flat but not rigid. It was slightly tender just above and to the right of the umbilicus and also above the pubes and just below the left costal margin. Pressure above the pubes caused pain above the umbilicus. No abnormalities could be detected in chest, epididymis or urine. The reflexes were normal. He gradually became dull and slightly cyanosed and the pulse became weaker. He developed an attack of acute cardiac collapse with dyspnoea, extreme cyanosis and a pulse rate of 160. The administration of "Pituitrin" helped him temporarily, but after several such attacks he died three days after admission. The pulse rate did not exceed 120 except during the acute attacks.

Pathological Report.

I am indebted to Professor J. B. Cleland for the following pathological report:

Examination of the patient's abdomen *post mortem* showed extensive tuberculous plaques over the surface of the peritoneum. In the mesentery, about fourteen centimetres from the caecum, was a small caseated tuberculous focus with intense congestion and some puckering around it. Small caseous glands were present in the hilum of the right lung and near the hilum of the liver. There was no ulceration of the intestine. In the situations of both suprarenal glands were considerable masses of fibro-caseous tuberculous tissue forming caps to both kidneys. Suprarenal tissue was not recognizable in sections made through this tissue. These masses were connected together across the vertebral column by enlarged fibrotic, probably tuberculous, glands.

TYPHOID FEVER WITH SUPPOSED PERFORATION.¹

By WM. RAY, B.Sc., M.B., B.S. (ADELAIDE),
Honorary Physician, Adelaide Hospital.

DORIS B., *etatis* nineteen, was admitted to the Adelaide Hospital on February 12, 1923, suffering from typhoid fever.

She had been feeling ill for a week, with indefinite malaise and had vomited twice. There had been slight discomfort in the right iliac fossa.

On admission the temperature was 40° C. (104° F.) and the pulse rate 144. The only other abnormal signs were a few pink maculae on the abdomen and slight tenderness in the right iliac fossa. Two days later the leucocyte count was 4,083 per cubic millimetre and agglutination was found to occur with Widal's test.

There was a small hæmorrhage on February 16, 1923, but apart from this she followed a typical course of moderately severe typhoid fever. She passed two sloughs by the bowel on March 8, 1923, and the temperature became normal two days later.

On March 19, 1923, the temperature began to rise and three days later it was 39.2° C. (102.5° F.) and the pulse rate was 144. There were no other complications.

On April 2, 1923, she vomited at 3.30 p.m. a green fluid and repeated the vomiting at hourly intervals until 8 p.m. when she went to sleep until midnight and vomited only once during this time. At 12.30 a.m. on April 3, 1923, the vomiting occurred almost every fifteen minutes together with hiccough. The temperature fell from 39.2° C. (102.4° F.) to 35° C. (95° F.) in eight hours and the pulse rate rose from 88 to 140. The greatest amount of fluid vomited at one time was 210 cubic centimetres (seven ounces). On the other occasions the quantity was thirty to sixty cubic centimetres. There was some rigidity and tenderness of the abdomen most marked on the right side.

No fluid was detected in the peritoneal cavity. The liver dulness was normal. There was no abdominal distension.

Dr. Malcolm Scott opened the abdomen at 5 a.m. on April 3, 1923, by an incision through the right rectus below the umbilicus. A tensely distended stomach, reaching to within five centimetres of the pubes was seen immediately on opening the peritoneum, but no sign of peritonitis or perforation could be found. After closure of the wound the patient was kept lying on the right side. The vomiting ceased immediately. The patient had no further trouble and on May 8, 1923, was eating practically the full hospital diet.

I can only regard the condition as one of moderate degree of acute dilatation of the stomach.

A CASE OF FAMILIAL HÆMOLYTIC SPLENOMEGALY TREATED BY X-RAYS.²

By E. SYDNEY LITTLEJOHN, B.A. (SYDNEY), M.D., Ch.M.
(EDINBURGH),
Honorary Physician, Royal Alexandra Hospital
for Children, Sydney.

O.M., a girl, was admitted to the Royal Alexandra Hospital for Children two years ago at the age of twelve, suffering from severe anaemia, moderate jaundice, and recurrent "attacks." During these "attacks" she got much paler and more jaundiced, had some fever and often complained of pain "in the stomach." The periodical exacerbations recurred every few weeks, lasted several days and necessitated confinement to bed. During the intervals between the attacks she was quite bright and lively. She had never had any hæmorrhages. It was stated that her illness had begun in early infancy when it was noticed that she was very pale and yellow; soon after this she began to have the "attacks" and the condition had persisted ever since.

There was only one other child in the family, a boy aged nine years, who was quite well, but the patient's mother

stated that she herself had been anæmic all her life and that her mother, the present patient's grand-mother, had suffered from some "blood-disease" which the doctor had informed her was exactly the same as that affecting the grand-daughter.

On examination she was seen to be of a curious yellow pallor with jaundiced conjunctivæ. Her spleen was very large, extending right down to the umbilicus. The liver also was enlarged, reaching to 3.75 centimetres (one and a half inches) below the costal margin. There was no enlargement of the superficial lymphatic glands.

The urine was dark in colour but did not contain any bile nor did it contain any lead. No reactions were obtained to the Wassermann and von Pirquet tests. During the next few months the blood was examined many times by Dr. Marjory Ross; the results are summarized as follows: The red cells varied between 1,500,000 and 3,000,000 per cubic millimetre; the hæmoglobin value varied between 35% and 60%; the colour index varied between 0.4 and 1.17, being generally about 1.0; the leucocytes varied between 2,000 and 12,000 per cubic millimetre and showed no abnormal forms. There was always much poikilocytosis, anisocytosis and polychromasia; definite punctate basophilia was often present. Normoblasts and megaloblasts were nearly always present in considerable numbers. The fragility of the red blood corpuscles was tested on three occasions and on two it was found to be increased to 0.49 and 0.5.

The patient had periodical hæmolytic paroxysms, recurring every few weeks, during which her temperature rose to from 37.8° C. to 38.3° C., the pallor and jaundice became more marked and the spleen and liver increased in size and became tender. During these attacks she had to remain in bed, but in the intervals was quite bright and lively.

In regard to treatment I found that medicinal means including the subcutaneous administration of cacodylate of soda proved quite useless. After six months' trial, that is eighteen months ago, I thought it might be worth while to try the effect of X-ray therapy applied to the spleen before suggesting splenectomy. Dr. Sear, therefore, kindly submitted the patient to a course of nine applications of X-rays to the spleen, the course extended over two months and the results have been most satisfactory.

Improvement soon began to show itself and has steadily continued. The anaemia and jaundice became less, the spleen and liver became reduced in size and the hæmolytic paroxysms became less severe and less frequent. At the present time the spleen is reduced to such an extent that it can be pushed right under the costal margin, the liver is normal in size and there has been no hæmolytic paroxysm for the last ten months.

I intended having another blood examination made before reporting the case, but circumstances prevented it. I hope to repair this omission at a later date.

INTUSSUSCEPTION WITH MECKEL'S DIVERTICULUM.¹

By WILFRID VICKERS, D.S.O., M.B., Ch.M. (SYDNEY),
Honorary Assistant Surgeon, Royal Alexandra Hospital
for Children, Sydney.

Clinical History.

R.R., *etatis* seven years, was admitted to the Royal Alexandra Hospital for Children on March 7, 1923. On the morning of March 6, 1923, he had complained of not feeling well. Slight abdominal pain had been present. He had not vomited. The bowels had been opened. On the morning of March 7, 1923, the abdominal pain became very severe. He was given three doses of oil which he vomited. He had three enemata which duly returned mucus and blood. On examination, thirty-six hours after the commencement of the attack a mass could be felt in the abdomen about the size of an orange mostly to the left of the umbilicus. There was a moderate degree of distension chiefly in the upper portion of the abdomen. The child looked very ill. On opening the abdomen it was found difficult to undo the twist of the small intestine.

¹ Read at a meeting of the South Australian Branch of the British Medical Association on April 26, 1923.

² Read at a meeting of the New South Wales Branch of the British Medical Association on May 11, 1923.

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on May 11, 1923.

The *caput caeci* was identified and about ten centimetres (four inches) below this the tip of an intussusception was felt. By steady pressure reduction was started and the intussuscepted portion passed along the small intestine for about 37.5 centimetres (fifteen inches). At this point a Meckel's diverticulum was found and the specimen which I demonstrate, shows this structure still invaginated. The last fifteen centimetres (six inches) were difficult to reduce and the peritoneal coat began to tear. A length of about twenty centimetres of intestine was found to be very dark and hæmorrhagic and of sufficiently doubtful vitality to call for resection. About thirty centimetres (twelve inches) of intestine including the diverticulum were removed and the continuity of the bowel restored by end-to-end anastomosis. The child made an uninterrupted recovery.

Comment.

A very interesting review of the literature on this subject has been made by Tyrrell Gray in the *Annals of Surgery*. He points out that a Meckel's diverticulum is present in 2% of human bodies. As a rule it forms an attachment to the mesentery or to the umbilicus and so cannot become invaginated. This explains the infrequency of intussusception due to this structure. He reviews forty instances of intussusception due to this cause. Of twenty-seven patients operated on fifteen needed resection of portion of the intestine. There was a mortality of 53%. Of this series 76% occurred in males and 50% occurred in children under ten years of age.

Gray points out that Meckel's diverticulum invariably has a poor blood supply. It has no mesentery and derives its blood supply from the intestines. Its mucus membrane is very loose and may easily be separated from the other coats. This would lead to recurring attacks of partial invagination and the invagination would account for the attacks of abdominal pain accompanied by the passage of small quantities of blood. The passage of blood is frequently found in this condition which is usually mistaken for appendicitis.

As a rule the history of the attack is of longer duration than an ordinary intussusception. In Gray's collection of cases the average was three and a half days. Probably the Meckel's diverticulum becomes gangrenous at an early stage and only causes complete obstruction later on. He remarks that a persistent diverticulum is a greater menace to life than an *appendix vermiformis* and should always be removed.

Reviews.

HEALTH AND HISTORY.

THE question of the influence of bodily health and disease on the mental and physical activities of human beings is one that has of late called for increased attention. That the actions of mankind are coloured by conditions of health is an everyday experience. Many a small boy has just reason to remember in his own epidermis the over-conviviality and subsequent gout or "sore head" of his schoolmaster and many a student of medicine has been dealt with summarily by a medical teacher with a recent accession of sciatica. Some clinicians would regard most human activities as expressions of normal or abnormal physiology and would explain moral lapses in terms of the endocrine balance. That modern master poet, Francis Thompson, in his essay on "Health and Holiness," offers the suggestion that the two may really be identical and quotes the following words from the letters of George Porter, S. J., Archbishop of Bombay: "As for evil thoughts, I have so universally remarked in your case that they are dependent upon your state of health, that I say without hesitation, begin a course of Vichy or Carlsbad." And surely in action as in thought.

The investigation of the actions of persons famous in history from this point of view is somewhat novel and has been undertaken most successfully by Dr. Charles MacLaurin in his book "Post Mortem," described as "Essays, Historical, Medical and Literary."¹ Several of these essays

¹ "Post Mortem: Essays, Historical and Medical," by C. MacLaurin, M.B., C.M., F.R.C.S.E., LL.D.; 1923. London: Jonathan Cape; Sydney: Angus & Robertson, Limited; Crown 8vo., pp. 255. Price: 7s. 6d. net.

have appeared from time to time in THE MEDICAL JOURNAL OF AUSTRALIA to the delight of many. The author discusses various personages, endeavours to determine the nature of illness from which they suffered and to gauge the effect of this on their actions and so on history generally. The material brought forward in these essays is good and the method of presentation is inimitable. Making use of a delicate irony and with an obvious sense of humour the author employs a style which is at once fascinating, graceful and compelling. Most readers will probably be drawn chiefly to the pathetic figure of Joan of Arc. "It is difficult not to become sentimental over Jeanne d'Arc." The study of the Emperor Charles V. who ate himself to death, is most interesting, while that of his son, Phillip II., with the accompanying remarks on arterio-sclerosis would make it appear advisable to compel would-be members of Parliament to submit to medical examination before each polling day. Don Quixote is treated as a real individual and rightly so. The tremendous hydrocele of Edward Gibbon was probably accompanied by hernia and the author holds that Gibbon's death was most likely caused by streptococcal peritonitis subsequent to tapping the hydrocele. In the case of Gibbon, as elsewhere, the author conjectures what might have happened in history if certain conditions had not existed—an interesting even though futile procedure. Anne Boleyn and the syphilis of Henry VIII., that extraordinary person the Empress Theodora, Don John of Austria, the iniquitous Jean Paul Marat, Napoleon I., Benvenuto Cellini and the incomprehensible Samuel Pepys and his wife are in turn subjected to a searching examination. Finally the author has added a chapter on death which, though perhaps unorthodox, is full of common sense.

This book is one that should be read equally by medical men and those interested in history and literature. Both will find in its pages unexpected information, considerable fascination and mental delight.

MODERN TREATMENT OF FRACTURES.

E. W. Hey Groves's second edition of his work on modern methods of treating fractures is the most valuable contribution that has recently appeared.¹ The author's inclination is distinctly towards operative treatment. In most cases he has the sanction of sound mechanical principles. After dealing with the ordinary general principles involved in the treatment of fracture the author details his own experimental observations on the treatment of fractures in animals. He performed a large number of experiments on animals in which the actual fixation of the fragments depended absolutely upon the mechanical fixations at the site of fracture. The behaviour of various substances and the results of different methods of fixation are given in detail. A criticism that might be levelled at his conclusion, is that in the treatment of human fractures the surgeon is not necessarily limited to mechanical fixation of the fragments alone but can depend upon external fixation as well. The experimental methods which the author employed, however, have revealed many interesting facts which can be applied directly to the treatment of human fractures. To take one example only, he found that the necessity for removing screws or similar devices from the method employed in their fixation in the living bone. Mobility of the fixing device is the precursor of trouble in dealing with the actual treatment of human fractures. The author gives a very just and very complete description of well known mechanical methods in addition to those which have been evolved by himself. Most of the common types of fracture are dealt with and the problems arising from mal-union and non-union are effectively treated. This work is not a text-book in the ordinary sense, for it represents most of the advanced work that has been done in the treatment of fractures, not a little of which is due to the author's own valuable contributions.

¹ "On Modern Methods of Treating Fractures, Including the Jacksonian Prize Essay on Bone Grafting," by Ernest W. Hey Groves, M.S., M.D., B.Sc. (London), F.R.C.S. (Eng.); Second Edition; 1921. Bristol: John Wright & Sons, Limited; Crown 4to., pp. 435, with 296 illustrations, some of which are fully coloured. Price: 30s. net.

The Medical Journal of Australia

SATURDAY, JUNE 23, 1923.

The Hospital Question.

Not long ago the Victorian Parliament debated a bill for the better administration and control of charitable institutions including hospitals. In the original bill there were several clauses dealing with what is termed the intermediate hospital. The Legislative Council, however, disapproved of these clauses and they do not appear in the Act. The measure provides for the establishment of a Board of Management of fourteen unpaid members. This Board acts under its own powers and is subject to the control of the Governor in Council. Its functions include the investigation into the administration and management of every subsidized institution or benevolent society, the determination to close or amalgamate existing institutions, provided that no hardships result from such closure or amalgamation, the sanctioning of proposals to raise funds for separate institution by means of sports meetings, entertainments, bazaars and the like and the control of the registration of every subsidized institution. The Act further provides for the establishment of a Hospital and Charities Fund and prescribes the manner in which appeals may be made to the public to support hospitals and charitable institutions. The Board of Management is required to work largely through a metropolitan and a country sub-committee. The machinery created is relatively simple and should move easily and smoothly. In the original Bill it was proposed that the Board should be under the chairmanship of a salaried Director of Charities, but this was altered in the Committee stage. Instead of a paid Director, there is to be a paid Inspector of Charities who is to be appointed from outside the Public Service. He is to have considerable administrative powers, but will not be a member of the Board.

In Western Australia a *Hospitals Bill* was introduced into Parliament over a year ago, but its pro-

visions were unsatisfactory both to the medical profession and to members of Parliament. Later a second bill was introduced and although this measure was regarded by many as a workable and good bill, it failed to reach the statute book, largely on account of legal technical difficulties. We understand that defects in the drafting are being remedied and that the bill will be reintroduced next session. It has the approval of the medical profession in the west and will probably be passed through both houses.

In New South Wales the Minister of Health has recently discussed the question of hospital administration and control with representatives of various interested bodies, including the medical profession. The delegates of the Council of the New South Wales Branch of the British Medical Association advocated the establishment of a hospitals board free from political control whose functions it should be to determine the number, nature and equipment of hospitals in each district of the State and to prescribe the method of administration and management, in order that there may be uniformity of construction and working of country hospitals. The delegates dislike the proposal to subject country hospitals to municipal control.

In Tasmania the hospital question is again a matter of negotiation and serious attempts are being made on all hands to overcome the difficulties in regard to the re-establishment of the honorary system. At this stage no amendment of the *Hospitals Act* is contemplated nor is there any indication that the Government would concede the point which led to the resignation of the members of the honorary staff of the Hobart Hospital in 1918. For the present, therefore, the Tasmanian hospitals must be classed as Government institutions, controlled politically as places where anyone can obtain treatment for accident or disease.

From this recital of recent events it will be evident that medical and public opinion is tending toward the recognition that the hospital system stands in need of reform and that central control is preferable to either local or political control. Both the Victorian and the New South Wales schemes involve a certain freedom of local administration, but this and the management are subject

to the approval of the central authority. Moreover, the view held by the majority appears to be that for economical reasons country and district hospitals should be built and run on stereotype lines, devised to admit of expansion and adaptation to local requirements.

At the present time over four and a half million pounds sterling are spent in the Commonwealth on hospital and charitable institutions and public relief. The generous public contributes a substantial proportion of this immense sum. Both in Victoria and in New South Wales the Government recognizes that the public hospitals are places where the persons of small means can obtain medical and nursing care for which they could not pay elsewhere. The practice is gaining ground to require those who can pay something, to contribute to their maintenance in hospital. In Victoria the contributions of patients provided about one-fifth of the amount required to support the hospitals. Voluntary contributions form an important part of the revenue of these institutions, although the Government realizes that Parliament must be prepared to make good the deficit. Similarly in New South Wales it is important that the voluntary contributions of the charitable public should be encouraged. Various proposals have been suggested to insure a sufficient fund for the hospitals. While every legitimate channel should be exploited for this purpose, it is to be hoped that the very questionable expedient of lotteries and other forms of gambling will not become general. There is one source of income which has not yet been attacked. It is a significant fact that members of the friendly societies utilize the hospitals to a very large extent. This use is a legitimate one and it is usual for these patients to pay out of their private means sums covering part of their maintenance. The friendly societies have large funds derived in the past from the contributions of their members. Since the medical benefit of the societies includes treatment during illness and for injury, it would be reasonable to require them to contribute to the hospitals in proportion to the numerical strength of their members. A hospital tax is a less sound proposal, for it would necessarily be borne in part by persons of small means, the very persons who derive the benefit of hospital treat-

ment because they cannot afford to pay for this treatment outside. Moreover, if a tax were levied, there might be a reluctance on the part of voluntary contributors to keep up their donations to the hospitals.

Some day the whole hospital question will have to be considered by the medical profession and the public. When this is done, it will be wise to face the problem of the trust imposed by the public on the medical profession and the evidence the latter has to offer of the manner in which that trust is honoured. With a reform of hospital administration and management there must be a reform of the professional arrangements. A modified system of hospital standardization is needed, in order that the public may become aware of the value of the work carried out gratuitously by medical practitioners in these institutions. There should be a control of the quality of the work. The public has a right to receive an independent estimate of the way in which the honorary medical officers of the hospitals perform their duties to the sick poor.

Current Comment.

THE AUTOLYSATE-PRECIPTIN REACTION IN TYPHOID FEVER.

IN the diagnosis and control of typhoid fever the Widal reaction and the isolation and culture of organisms of the typhoid group are laboratory procedures of definite value. Their sphere of usefulness is unfortunately somewhat limited. The Widal reaction depends for its production on the formation of agglutinins in the serum of the patient; the isolation and culture of typhoid organisms from stools and urine are difficult and often unsatisfactory. This is partly due to the fact that these organisms may undergo autolysis in either situation. The precipitin reaction in typhoid fever has been used with varying success. It consists in a reaction between the serum of a patient and a known typhoid solution.

Drs. J. L. Laird, J. R. Conover and D. C. A. Butts have published a preliminary report on the precipitin-autolysate reaction that has been devised by them.¹ The reaction depends on the action of an antityphoid serum of a rabbit on the products of autolysis of typhoid bacilli in the excretions of the persons suffering from enteric fever. They lay stress on the methods used for preparing the rabbit's serum and the suspected stool or urine. In the preparation of the rabbit's serum one of several methods may be used. In the first method the clear

¹ *The American Journal of the Medical Sciences*, February, 1923.

supernatant fluid of an incubated and centrifuged suspension of typhoid bacilli in normal saline solution is used for injection into a rabbit. In the second method typhoid bacilli are taken from an agar slant after culture for twenty-four hours, suspended in normal saline solution and killed at 60° C. In the third method killed typhoid bacilli are given first subcutaneously and then intravenously. All three methods were found to yield good results, but with the third method the highest agglutination titre was attained, namely, one in 6,400. In the preparation of the suspected stool Drs. Laird, Conover and Butts found that a satisfactory filtrate was obtained if two grammes of stool were emulsified in twenty cubic centimetres of normal saline solution until a normal suspension was obtained. If organisms suggestive of typhoid bacilli were found on microscopical examination, special cultures were made. The whole suspension was incubated to insure autolysis. The supernatant fluid was centrifuged and added to another tube containing 0.5 gramme of diatomaceous earth, agitated and filtered. In the preparation of urine it is necessary to remove all trace of albumin. This is done by adding dilute acetic acid and filtering. Drs. Laird, Conover and Butts state that the resulting acidity in no way interferes with the test. They have not determined the actual hydrogen-ion concentration of these specimens, but state that they intend to investigate this aspect at a later date. The albumin-free urine is centrifuged, mixed with diatomaceous earth and filtered. The controls used by these investigators were normal faeces and urine treated under the same conditions as the infected specimens together with infected specimens to which no serum had been added, and samples of the uninfected serum. It is not necessary to describe in detail the technique of the test such as the setting up of the tubes and the arrangement of the control tests. It is sufficient to state that one cubic centimetre of the known typhoid serum is placed in a tube with the same quantity of the specimen to be tested. They are mixed by shaking and allowed to stand at room temperature for an hour. Subsequently they are placed in an ice box over night. The precipitate generally appears after four or five hours. A precipitate was obtained with this test in one hundred and fifty-two specimens of faeces and urine from typhoid patients and convalescents.

The test was performed upon autolysates of other pathological organisms occurring in the intestinal tract, such as *Bacillus morgani*, *Bacillus shiga*, *Bacillus para-coli* and five strains of *Bacillus dysenteriae*, *Bacillus typhosus* and *Bacillus paratyphosus* A and B were included in this group. A reaction was found to occur with each of the members of the typhoid group, but not with the other organisms. Moreover, the intensity of the reaction increased as autolysis increased. A series of experiments was carried out on specimens from known typhoid patients and convalescents. One hundred and three specimens were examined. A reaction was obtained in 100% of these specimens at periods up to the fifty-sixth day of the disease. Blood culture and the Widal test were carried out in some instances, but

not sufficiently often to allow of any comparisons to be drawn as to the relative value of these procedures.

Drs. Laird, Conover and Butts conclude that it is reasonable to state that the autolysate-precipitin reaction is more sensitive and more accurate than any other method of investigation. They very wisely add a warning that their conclusions should not be accepted as final in view of the limited scope of their inquiry. It would seem, however, that a test of value has been added to those already in use. It may be possible to elaborate a similar test for other intestinal affections due to a specific organism.

THE TREATMENT OF ACUTE APPENDICITIS.

It has long been recognized that in the treatment of acute appendicitis the question of early diagnosis is of paramount importance. It is the common experience of surgeons that operation undertaken at the onset of symptoms is attended by a mortality much lower than when undertaken at any later stage. The attitude of surgeons towards drainage of the peritoneal cavity has changed somewhat during the last decade. It is now recognized that the peritoneum is capable of dealing with a considerable amount of septic material. The experience of surgeons on the battlefields of France was abundant proof of this. It is well, however, to review the position occasionally. This has been done recently by Mr. J. R. McNeill Love.¹ Mr. Love has reviewed the cases of appendicitis occurring in patients admitted to the London Hospital during the years 1919 to 1922. The records of 1,503 patients have been examined. Mr. Love points out that in the majority of instances there is found soon after the onset of symptoms a band of hyperæsthesia on the abdominal wall above Poupart's ligament. This is an indication that the peritoneum surrounding the appendix is stretched by œdema or distension. Of one hundred and seventy-six patients operated on at this stage the mortality was 0.57%. Most practitioners will agree with Mr. Love that there is no controversy about the suitability for operation of patients in this stage of the disease. The patients operated on at once (exclusive of those in the early stage) numbered 1,099. The mortality in these patients was 6.24%. Drainage was used in 94.5% of patients subjected to emergency operation. Operation on the third day of disease carries a higher mortality than at any other stage. The mortality in this series of those operated on on the third day was 9.8%. Mr. Love suggests that the resistance of the patient is at its lowest at this time. In two hundred and twenty-eight patients the operation was delayed and one hundred and fifty-one responded to expectant treatment. Of the seventy-seven whose condition did not subside, the mortality was 6.5% and drainage was established in 94.9%. Mr. Love concludes that better results are obtained after the stage of hyperæsthesia has passed with expectant than with immediate operative treatment. This may be so in skilled hands, but it is dangerous doctrine for dissemination among all and sundry.

¹ The British Journal of Surgery, April, 1923.

Abstracts from Current Medical Literature.

MEDICINE.

Pernicious Anæmia.

R. D. ROBINSON (*Illinois Medical Journal*, February, 1923) has reviewed the present state of knowledge of pernicious anæmia. Changes in the stomach, infections, alterations in the spleen and bone-marrow, infestations with parasites, notably the *Balan-tidium coli* and *Bothriocephalus latus* and intoxication from the large bowel have all been blamed for the causation of the disease. Of all the theories the author inclines strongly to the view of an infective origin. He points out that it is usual to associate any disease characterized by a protracted rise of temperature and enlargement of the spleen with protozoan infections and in particular infections due to spirochætes. If pernicious anæmia is compared with syphilis, it will be remembered that a prolonged low grade fever is present in both, in both there is destruction of blood cells, both commonly show enlargement of the spleen and both yield to arsenic or its derivatives in a considerable degree. Finally there is a definite analogy in the spinal changes with special predilection for the columns of Goll and Burdach and the qualitative changes in the cerebro-spinal fluid are similar. About three-fourths of the patients are affected after the age of thirty-six and males are twice as liable to be affected as females. The pathological changes in the liver, spleen, kidney, heart muscle, bone marrow, spinal cord and skin and the characteristic changes in the blood are well known and nothing further has been added to knowledge in recent years. The onset of the disease is insidious. The initial symptoms are weakness, languor, breathlessness on exertion and pallor. There is little or no loss of weight. Hyperchlorhydria is always present, achylia sometimes. Colicky, epigastric pain is occasional. Inflammation of the tongue and gums is frequent and diarrhoea occurs in 50% of patients. When hæmatemesis and melæna occur, the accompanying pallor and the age of the patient suggest the diagnosis of cancer of the stomach or bowel. The urine is usually pale but may be dark or smoky from the presence of urobilin due to hæmolysis. Numbness and tingling of the extremities are symptoms referable to the nervous system. A "tabetic" syndrome (lancinating pains, loss of reflexes, girdle sensations and paræsthesia) due to involvement of the postero-lateral columns sometimes occurs. A spastic type due to involvement of the pyramidal tracts is less frequent. The nervous involvement may be the first recognizable symptom of the disease. The patient is well nourished, his skin is of a pale brown or faint icteric tint, his mucous membranes are blanched and oedema of the ankles may be present. The pulse is collapsible. A

hæmic murmur at the apex is common and pulsating carotid vessels are visible. The medicinal treatment is similar to that for active syphilis, the arsenical drugs, "Neosalvarsan" and sodium cacodylate being the best. Transfusion of whole blood once a week for two or three weeks produces a definite amelioration of symptoms. Splenectomy has been somewhat extensively practised with apparent prolongation of life. Many of the patients in whom the result has been favourable, may have been, as Mayo has pointed out, suffering from hæmolytic icterus and not from pernicious anæmia.

The Economic Aspects of Heart Disease.

ROBERT H. HALSEY (*The Journal of the American Medical Association*, April 7, 1923) has directed attention to the increasing number of deaths and incapacity of patients due to diseases of the heart. In recent years he has followed the practice of examining patients for evidence of impairment of the functions of the heart during and soon after the occurrence of such diseases as tonsillitis, rheumatism, chorea, bone and joint pains, scarlet fever, diphtheria, pneumonia, typhoid fever, syphilis and gonorrhœa. These observations have convinced him that recognizable destructive processes are initiated months or even years before gross incapacitating effects become obvious. Examination of industrial workers and of applicants for life assurance shows that two persons in every hundred are handicapped by organic heart disease. A recent survey of ten hospitals in the city of New York, representing 25% of the total hospital accommodation of the city, showed that one in every ten patients treated was suffering from disabilities due to diseases of the heart. When, in addition, the impaired productivity of persons suffering from unrecorded or unrecognized cardiac lesions is considered, the total economic wastage must be very costly to the State. The actual death-rate from diseases of the heart is mounting higher and higher, especially in the cities. In 1920 10.9% of the number of deaths from all causes were assigned to diseases of the heart. Of these deaths from cardiac disease 0.5% occurred in the first year of life, 0.88% in the first five years, 1.6% in the first ten years, 30.86% in the age period from ten to fifty-nine and 67.39% after sixty years of age. The author insists that the relatively high death rate of later life must not obscure the importance of death from heart disease in childhood, since expectation of life at birth is 55.08 years, while the expectation at sixty is only 15 years. In the United States in 1921 there was expended an average *per capita* of ten dollars for candy, nine dollars for education, fifty cents for chewing-gum and twenty-nine cents for health. The author pleads for an increased expenditure in the interests of the public health and the provisions of a programme designed to reduce the morbidity from heart disease to a minimum.

Pulmonary Tuberculosis.

C. RIVIÈRE (*The Lancet*, February 3, 1923) enters a plea for changed methods in the treatment of the tuberculous poor. He states that the present method in England is to allow the patients to go about until a bed is available in a special hospital or sanatorium. Three months is the average time in hospital for these patients and they are then discharged to their homes and advised to attend as out patients. Numbers of patients have to wait weeks or months for admission. During this waiting time the disease becomes more and more advanced and the patients' chance of recovery less. He suggests that as soon as a diagnosis has been made, the patient should be sent home to bed as far as possible in the open air and that visits should be paid by a trained nurse. One nurse should advise the patient and keep records for submission to the physician. When fit to do so, the patient could be allowed up to attend an out-patient clinic once weekly. A régime of rest and graduated exercise could be adopted and this might be followed as recovery takes place by regular exercise and a return to work. This scheme is based on the method of Pratt, of Boston, who states that four months' rest in bed and four to seven months of graduated exercise combined with bed rest, followed by a period of increasing exercise for one to four months, is found to be sufficient for recovery in those patients who are taken early enough. The author considers that this method of rest in bed at the outset would give a much higher recovery rate than the present method adopted in England.

Arthritis.

R. A. KINSELLA (*The Journal of the American Medical Association*, March 10, 1923) deals with the present attitude of the medical practitioner in regard to the treatment of chronic infective arthritis. He investigated the records of about four hundred patients suffering from this condition who had been treated at the Barnes Hospital, Washington University School of Medicine, since 1913. At this time, the infective theory of the causation of chronic infective arthritis became prominent in America. Before 1913 histories of such conditions were meagre, the study of them was scanty and treatment unsatisfactory. The advent of the infective theory stimulated investigation and improved methods of treatment. A number of patients with chronic arthritis were found to have heart disease and the joint condition recovered quickly on treatment with salicylates. These were regarded as suffering from rheumatic fever. There were four patients over sixty years of age with changes in the small joints of the fingers and toes; the author considers that slowing of the circulation associated with age may be a factor in the causation of some of these conditions. There were a number of instances of gonorrhœal arthritis, gout, syphilitic and tuberculous arthritis classed under the same heading. The serum of the

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patients suffering from the gonorrhœal type of the disease gave a reaction to the complement fixation test with gonorrhœal antigen. There were twenty-three instances of *arthritis deformans*, only three of the patients were men. The average age of the patients at onset was thirty-nine and the average duration of the disease after admission to hospital was nine years. In none of these was there any obvious focus of infection, but tonsillectomy, tooth extraction and vaccines were used in many; baking, special diet as advised by Pemberton and intravenous injections of proteose and typhoid vaccine were tried. Frequently temporary improvement followed the use of typhoid vaccine, but no benefit followed any other form of treatment used. The condition in these patients began with painful stiffening of fingers and toes. There were thirty-five examples of arthritis beginning in the larger joints and associated with swelling, redness and heat. These the author classes as true infective arthritis. In 58% of these, no focus of infection was found. Purulent prostatitis, vesiculitis, *otitis media*, cholecystitis, purulent rhinitis and pharyngitis due to the *Streptococcus hemolyticus* were found in different patients. A few of these patients improved, but an equal number were not obviously benefited by treatment of the infective focus. Except for treatment of an infected area by irrigation and drainage, the same treatment was used in these patients. Tonsillectomy was frequently followed by relief, which was generally temporary. Baking relieved some patients and aggravated the condition of others. As much improvement occurred in patients in whom no focus of infection was found, as in those in whom a focus was found and vigorously treated. The author concludes that a focus of infection should be sought and that many forms of treatment should be tried for each patient. He considers that evidence is lacking that *arthritis deformans* is due to a focal infection.

Toxic Goitre.

J. H. MEANS AND G. W. HOLMES (*Archives of Internal Medicine*, March, 1923) have published some further observations on the X-ray treatment of toxic goitre. They studied the condition of forty-four patients recently affected by exophthalmic goitre, fourteen recently affected by toxic adenoma and nine previously treated with X-rays. Each patient was seen by the medical, surgical and radiological staff in consultation and the treatment was planned as a result of this collaboration. One exposure to X-rays was given each three weeks (thirty-five to forty milliamperes minutes) and the progress was compared by studying weight, pulse-rate and basal metabolism. Increase in weight, slowing of the pulse and decrease of basal metabolic rate were taken as evidence of improvement and *vice versa*. Twelve patients were apparently cured, sixteen were definitely improved but not rendered free from hyperthyroidism.

This improvement manifested itself in the first five months and treatment with X-rays after that time appeared to give little benefit. On an average the pulse-rate fell from 115 to 89 per minute, metabolic rate from +55% to +21% and weight increased by 9% in the first five months. All the patients with toxic adenoma improved under X-ray treatment and five were apparently cured. The return to normal was much slower in these patients in every direction. Of fifteen patients with exophthalmic goitre treated by X-rays in 1919 or during the four previous years three were not traced, three had died and nine were examined in 1922. Six of these had a normal basal metabolic rate. One had a rate of +15%, but like the six with normal rates was apparently in good health. Two others had elevated metabolic rates, but were otherwise clinically improved. The authors conclude that X-ray treatment is probably beneficial in exophthalmic goitre and toxic adenoma, but they consider operation advisable in the latter condition unless the symptoms are very advanced. Prolonged X-ray treatment in patients showing no response is undesirable.

Bacillus Acidophilus.

L. M. GOMPertz AND M. G. VORHAUS (*Annals of Clinical Medicine*, July, 1922) report the results of their investigations into the effect of administering cultures of *Bacillus acidophilus* by mouth to man. At first they used a milk culture, but later found that a broth culture was more suitable. Ten to twenty cubic centimetres of this culture were given two, three or four times daily. Of fifty patients with chronic constipation so treated, a satisfactory result occurred in forty-two and of twelve patients with chronic diarrhoea ten showed definite improvement. Under this treatment *Bacillus acidophilus* replaces *Bacillus coli* in the faeces in five or six days. When the administration of the culture is stopped *Bacillus coli* again predominates after the lapse of five or six days. The authors consider that the results of the treatment were satisfactory and they think more patients should be treated in this way in order to determine the best methods of employing it.

Exophthalmic Goitre.

L. KESSEL, C. C. LIEB AND H. T. HYMAN (*Archives of Internal Medicine*, March, 1923) have reported their study of fifty patients with exophthalmic goitre admitted to the Mount Sinai Hospital. The patients studied were those admitted in succession and no selection was made according to end results. Functional nervous disorders and shock were found to precede the onset in a large number of patients. Focal infection was present in 40%. Asthenia, loss of weight, palpitation and dyspnoea were the commonest symptoms. Goitre was present in 78%, exophthalmos in 60% and tremor in 70%. A constant elevation of the basal metabolism was regarded as an essential part of the disease. The patients were restless, unstable and sensitive. They were given a high

caloric diet (3,000 calories). Wet packs at 23.8° C. (75° F.) were given for restlessness, insomnia and sweating. "Luminal" was used as a hypnotic in doses of 0.09 gramme (one and a half grains) and syrup of ferrous iodide was given internally, no other drug treatment or therapeutic measure was adopted. The patients were kept in bed for six to ten weeks and were then sent to the country for a month. Five patients died and forty-one were socially or economically restored. Thirty-one of these patients were able to resume their occupation or social duties within six months of their admission to hospital. A number of symptoms still remain in many patients; palpitation and tachycardia on exertion, slight thyroid enlargement or exophthalmos have not completely disappeared in any instance. The period of observation varied between two and twenty-two months; most were observed for more than ten months. In these fifty patients the progress was towards arrest of the disease when treatment consisted of rest and good food. The prognosis in patients developing the disease after the age of forty-five was poor.

Tetany.

S. B. GRANT (*The Archives of Internal Medicine*, September 15, 1922) reports six cases of tetany in adults and discusses the occurrence of tetany in pyloric obstruction, hyperpnoea and as a result of over-dosage with sodium bicarbonate. Three cases occurred in pyloric obstruction, two after over-dosage with sodium bicarbonate and one in hysterical hyperpnoea. In all there was an acid base disturbance; in two the plasma carbon dioxide was greatly increased; in one the blood chloride was greatly decreased and the serum calcium was in the upper limits of normal. These results corroborate the experimental findings of investigators in animal. Calcium deficiency in the blood has been repeatedly found in parathyroid tetany and infantile tetany and recently an endeavour has been made to explain all forms of tetany as being due to a deficiency of calcium in the tissues, the deficiency in the blood being secondary to this tissue defect.

Syphilitic Headache.

I. C. SUTTON discusses headache in all stages of syphilis and reports a number of cases (*California State Journal of Medicine*, January, 1923). Of two hundred patients in the secondary stage of syphilis, eight complained mainly of headache and forty-eight had headache of varying severity. The pain was commonly occipital and frequently occurred at night. In cerebro-spinal syphilis the headache is practically continuous and is often worse in the day time. Headache is not uncommon in general paresis, but is rare in *tabes dorsalis*. Syphilis of the bony vault may cause headache either from periosteal involvement or when gumma of the frontal or parietal bones occurs. A rare cause of headache is syphilis of the cranial or peripheral nerves.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, 30-34, Elizabeth Street, Sydney, on April 27, 1923, the President, Dr. C. H. E. LAWES, in the chair.

Infection in Cardiac Disease.

DR. W. N. HORSFALL read a paper entitled "Infection in Cardiac Disease" (see page 627).

PROFESSOR A. E. MILLS said that he wished to thank Dr. Horsfall for his paper. It had contained a lot of interesting material. With much that Dr. Horsfall had said he was in entire agreement, but he could not go to the length to which Dr. Horsfall had gone when he contended that mechanical factors had nothing to do with cardiac failure, and that infection, by its effect upon the heart muscle, was the one and only cause for the condition. It was extremely difficult to deal with the question as it had been introduced by Dr. Horsfall, for the simple reason that he had cut the ground from under the feet of his critics by the extraordinarily wide use he had made of the term, infection—he had even included mal-nutrition under that heading. Surely that could not be justified.

Dr. Horsfall had spoken of heart failure as the result of a repetition of infective attacks in which the heart muscle received a series of blows. That certainly could occur and did occur, but it must not be assumed in every instance in which the heart was damaged by an infective process that a repetition of the infection would take place. The kidney suffered from infective process and the result was acute nephritis; the process cleared up and left no trace behind. On this other hand, the infective process might not clear up or the kidney might be subjected to repeated attacks and a chronic nephritis result. Surely an infective process attacked the heart as it did other organs. But it did not follow that there were going to be successive attacks of the same infective process, nor did it follow that the effect on the heart, which was the result of an infective process, would not disappear.

Professor Mills insisted that infection was not the only factor to be considered. The heart had to do work and if too much work was imposed upon it, especially when the individual was advanced in years, the result might be very serious. He referred to the case of an old gentleman, seventy-two years of age, who had prided himself upon his powers in cycling and jazzing. This man, one hot day, having missed his omnibus, had had to walk some three or four miles to catch a train after having already completed a long walk inspecting some property. When he had reached home he was very breathless and his doctor had found the heart markedly dilated and the patient suffering from heart failure. Could anyone doubt that the extra exertion—the mechanical factor—played a big part in producing the cardiac failure that this patient had presented? The mechanical factor was a large one, especially in the case of a muscle with a limited reserve. It was not necessary to assume that the heart always ceased work as a result of an infection and it was certainly stretching the meaning of them infection to bring mal-nutrition within its scope.

DR. J. MACDONALD GILL said that on the whole he agreed with Professor Mills. He thought that Dr. Horsfall had laid too much stress on infection in cardiac conditions. On the other hand, it had to be remembered that in the past too much had been made of the mechanical factor. Dr. Gill referred to observations that had been made on the hearts of oarsmen at Oxford. It had been found that instead of being adversely affected these men actually lived longer than others. Rowing was one of the most strenuous forms of exercise that could be undertaken and yet it produced no permanent defect in the hearts of youths. Dr. Gill had examined many young men who were supposedly suffering from "strained heart." He had never been able to find anything wrong with their hearts. The condition was generally a neurasthenic one; it was more mental than

physical. In discussing infection of the heart the first condition naturally thought of was that of rheumatism. The observations made by Coombs had been carefully worked out. In discussing the question in *The Quarterly Journal of Medicine*, Coombs had stated that the Aschoff's bodies found in the heart muscle could not possibly explain everything. They were not numerous enough and did not seem to affect the part of the heart muscle most necessary to the circulation. It was certain that in regard to rheumatism no progress would be made until the virus had been isolated and its effects studied in animals. It was unfortunately a fact that in regard to the nature of infection in heart disease and the methods of dealing with it the medical profession was in the same position at the present time as it had been thirty years ago. No advance had been made. It was true that the practitioner in diagnosing involvement of the heart in acute rheumatism generally looked for a murmur. Dr. Gill said that he had recorded an instance of heart block some years ago in which no murmur had been audible. Dr. Gill also referred to the case of a boy who had suffered from paroxysmal tachycardia for a few days. This had been succeeded by the presence of extra systoles for a period of two weeks and then the child had got well. He had been discharged from hospital. Some months later there had been a recurrence of the tachycardia and the extra systoles. There had been no murmur. The involvement of the heart in acute rheumatism generally occurred in children between the ages of four and fourteen. He was forced to the conclusion that the result of valvular infection of the heart was a slowly progressive process of cicatrization. The valvular mischief was not sufficient to account for the trouble. Some other factor was involved. It was necessary to suppose that the process of cicatrization continued after infection had taken place. Once infection had occurred, many reinfections might take place. In regard to pneumonia it was not necessary to suppose that the heart was infected, the heart recovered too quickly after the crisis occurred; in fact it was impossible to explain the rapid recovery of the heart if it were regarded as infected. It was not reasonable to suppose that the right side of the heart was necessarily submitted to strain in bronchitis. It was necessary to have regard to the heart's action as a whole.

DR. SINCLAIR GILLIES said that the two sides of the question had been most ably put before the meeting. Dr. Horsfall had championed the view that infection of the heart was the underlying cause of cardiac failure, while Professor Mills had laid stress on the mechanical factor. Surely the correct answer was that both views were correct. Each of these factors might be operative at different times. Dr. Gillies referred to the case of a woman of fifty years of age who had suffered from aortic disease. Seven years previously she had suffered from acute rheumatic fever. The disability of her heart had only recently attracted attention. Careful inquiry into her history had shown that she had suffered from five attacks of tonsillitis in the interval between her initial shock of acute rheumatism and the manifestation of cardiac failure accompanying aortic disease. Dr. Horsfall would probably rightly regard these attacks of tonsillitis as repeated forms of infection and the determining factor of the failure. On the other hand, it was impossible to disregard the mechanical factor in the case of the old man mentioned by Professor Mills. The unusual exertion combined with loss of elasticity of his blood vessels and chest wall had surely been the cause of the cardiac breakdown. In bronchitis the condition was probably purely toxic in some instances, but at the same time it was necessary to remember that in patients who suffered from recurrent attack of bronchitis, the chest became emphysematous, the respiratory pump failed and an extra strain was thrown on the circulation. Finally cough was generally present and might be exceedingly troublesome. It was often found that cardiac failure occurred first of all after a severe bout of coughing. The medical profession was always inclined to run to extremes. Twenty years before only the mechanical factor and such conditions as backward pressure had been blamed. Then toxins were paramount. The effect of toxins on the endothelium was regarded as the determining cause of the presence or absence of oedema. It was popular to discount valvular lesions and to regard the con-

dition of the muscle as all important. Dr. Gillies referred to a practical point in regard to industrial insurance. The question was frequently raised as to whether a man could strain his heart by doing heavy lifting and other forms of laborious work. In these instances the abnormal condition of the heart was probably brought about by a combination of mechanical factor and toxæmia, but the law made no allowance for the fact that it was a temporarily debilitated and not a normal heart that suffered.

Dr. HORSFALL in reply to Professor Mills said that if he had used the word mal-nutrition, he had not meant to do so. He referred to degeneration which was due to some toxic process. Interference with cardiac muscle was not necessarily due to an infective process in the heart. It might be due to an infective process somewhere else. This infective process did something and it was difficult to say what that something was. In regard to Professor Mills's old man, it was easy to put forward a case for infection. The man had been doing more work at the time of his long walk. It was true that the exertion had coincided with the cardiac failure. Why had the cardiac failure not come on when he had been jazzing?

In reply to Dr. Gill's statement that Aschoff was disappointed in that he had not seen enough in the cardiac muscle to account for the condition, Dr. Horsfall said that the areas of anæmic necrosis were present and Aschoff had stated that he had seen enough to account for interference of conduction in the bundles. Areas of anæmic necrosis occurred more particularly in the right papillary muscle of the right ventricle. The condition of acute rheumatism was undoubtedly very important. Treatment of a patient after acute rheumatism should not be discontinued when the patient had got out of bed. Search should be made for infective foci. In this connexion a good case might be made out for the enucleation of all suspicious tonsils after an attack of acute rheumatism. In pneumonia an infection was present. Surely it was a question of toxins and anti-toxins; the toxins were equalized by something that the body elaborated. As for degeneration, Balfour had written an illuminating book and in this book he had stated that he could not see that men died of old age alone, there was an infective process that killed men off. It was stated that old age *per se* did not kill. In regard to degeneration, there was always some cause for wear and tear. Old age varied in its incidence in different people.

Malignant Disease and Radium.

Dr. H. M. MORAN read a paper entitled "The Problem of Malignant Disease with Special Reference to Radium Therapy" (see page 632).

PROFESSOR F. P. SANDES expressed his pleasure at hearing Dr. Moran's address. Dr. Moran had appealed for sanity in the treatment of malignant disease and had drawn attention to the hopeless condition with which the surgeon often had to deal. He had done a service in bringing the question before them. During the course of his paper Dr. Moran had made three excellent points. In the first place he had referred to the malign influence which caused the cancer cell to break through the basement membrane. Secondly he had said that team work was necessary and in the third place he had entered a plea for cooperation between the surgeon, the radiographer and the radium therapist. In regard to the malign influence in question, it was necessary to consider the nature of the basement membrane and what caused its disordered action. This investigation concerned the realms of chemistry and physics. It was known that there was a protoplasmic balance both outside and inside the basement membrane in, for example, a glandular structure. This balance depended on the chemistry of the cell and an elaborate mechanism in its interior. In the interior of the cell were many particles of colloid substances continuously bathed in fluid containing salts whose solution acted as electrolytes. Even pure water was an electrolyte, for it was capable of being broken up into hydrogen and hydroxyl or OH. The hydrogen was the positive ion and the hydroxyl the negative ion. Protoplasmic balance was maintained by variation of the hydrogen and hydroxyl ionization process in the presence of solution of salts. In man a considerable capacity for adjustment of this balance

was present. Acids and alkalis could be added to the blood without toxic effect on account of the considerable buffering power of the blood serum in which the phosphates and the carbonates were to be taken into account. Further, in the breaking up of protein there were formed substances containing the COOH group to which the amino acids belonged. It had been shown that in the interior of the cell the members of the COOH group were concentrated towards the boundaries of the cell. The conditions at the basement membrane were complicated and would be solved by more intimate electric knowledge of the constitution of the atom. Rutherford had shown that the atom was composed of electrons which might circulate round a positively charged nucleus in a regular orbit or flicker to and fro. One of the most important of the atoms in the human body was the potassium atom. MacCallum had shown that in cells of the breast, for instance, the tendency of the potassium atom was to migrate away from the basement membrane during secretion. Experimental work had shown that the basement membrane might have its permeability affected by the potassium atom or by electro-magnetic waves of different lengths. It was probable that by a study of the interference with potassium metabolism a nearer approach would be made to the understanding of the phenomena of inflammation and to a solution of the cancer problem. Much was known of the metabolism of calcium and of sodium in the human body, but little was known of the metabolism of potassium. Potassium was a radio-active substance, in fact it was the only radio-active substance in the body and was capable of emitting negative electrons. The electrons were arranged around the potassium atom so that one of them might be broken off as a flying mechanism which might either conserve normal processes or damage the functional activity of the cell. Radium by virtue of its α particles might have no effect. The β being electrons and the γ rays being electro-magnetic waves might have considerable effect in changing the normal mechanism of the potassium atom, or in correcting it if it were acting abnormally. It was possible if the regular or irregular process in the cell was dependant on the radio-active potassium atom that bombardment by waves of certain lengths and by α and β rays might have considerable effect in altering the velocity of the electrons revolving round the nucleus of the atom, or even in changing its chemical constitution. It was not unlikely that in investigations of this sort some solution of the cancer problem might be obtained and an understanding arrived at as to the mechanism of the reaction to injury in living organisms.

Dr. Moran had referred to team work between the surgeon, radiographer and the radium therapist. Professor Sandes thought that team work should go much further. Team work should include cooperation with the physician, the chemist and the bio-chemist. Already something of this sort had been attempted at the Sydney University, but the lamented death of Professor Pollock and the absence in England of Professor Read had interfered with the work which it was hoped shortly to resume. He had much pleasure in thanking Dr. Moran for his paper.

Dr. E. H. MOLESWORTH congratulated Dr. Moran on the fact that he had brought before them the absolute necessity of reviewing the treatment of malignant disease. He admired Dr. Moran's honesty and candour in referring to the tragic nature of the results that were obtained by surgery alone. The question of unsatisfactory results in the treatment of malignant disease was one that was always difficult to raise. Vested interests were always in the way and no one was more insistent on his rights than the surgeon in regard to malignant disease. After hearing Dr. Moran's paper and the results that were obtained according to the best surgical records, practitioners would have to admit that it was time to wake up and endeavour by any means available to improve the most pitiable state of affairs that were revealed by the figures just read to them. In dealing with a patient whose condition was inoperable, were the means available to medical practitioners limited to the prescription of morphine and to the pronouncement of a sentence of death with the least possible shock? For years methods supplementary to surgical removal had been available. Some benefit accrued and

if this were only an amelioration a considerable amount would be done in the later and more painful stages. But great leaps and bound had been made of late in this direction. In the later periods of the war it had been found that the Germans had been working on lines more or less continuous with those of previous progress. Great advances had been made and X-rays of previously unheard of penetration and short wave length had been used. A certain amount of scepticism had been shown, but the results had been checked by the Americans and were now generally accepted. As a result there was now available in the treatment of malignant disease an agent which equalled if it did not surpass surgery in its effects and which was applicable to certain conditions in which surgery was of no avail. It did not matter whether the rays emanated from a two hundred kilovolt tube or from radium, there was a depressant or destructive effect on a cancer cell according to the dose administered evenly through the tumour. Provided a sufficient dose of rays could be delivered evenly over the area involved, all the cells could be killed and the disease cured. Yet such was the condition of affairs at the present time that very little use was made of this potent agent in the fight against malignant disease, a fact which was the more remarkable when it was remembered that this was probably the greatest advance in therapy since the introduction of antidiabetic serum. It was probable that in some instances failure was due to partial treatment, but it seemed certain that different types of growth showed widely different degrees of susceptibility to radium. The results obtained in Australia even in sarcoma were little short of miraculous. Dr. Molesworth showed the skiagrams taken from a girl whose condition had been diagnosed as mediastinal sarcoma. This patient had not been able to lie down at all owing to intra-thoracic pressure from a huge mediastinal tumour. After radiation treatment for one week the patient had been able to run about. Other cases of sarcoma could also be quoted. In regard to mammary carcinoma Dr. Molesworth saw no reason to doubt that any local condition could be removed by the application of a 100% dose. By this means, too, many patients with mammary carcinoma could be treated who were not fit subjects for surgical operation. In fact, in mammary cancer only the existence of distant and scattered metastases should determine failure. The same could be said for uterine carcinoma. It was said that at the present time operations in Germany for uterine and mammary carcinoma were rare. This might be carrying the matter too far, but the fact remained that in radiation there was available a very valuable method of treatment which had hitherto been unwarrantably neglected.

Dr. Molesworth thought Dr. Moran's suggestion in regard to team work was most opportune. He said that it was likely that in ten years' time no surgical operation would be undertaken for malignant disease unless opportunity had been given for the combined consideration of the condition by the surgeon, the radiologist and the radium therapist. He hoped that Dr. Moran's suggestion would come to fruition.

DR. ARCHIE ASPINALL expressed his thanks to Dr. Moran for his paper. He confessed that the statistics that had been quoted had come as a surprise to him. In particular he had not expected the figures to be so bad in cancer of the tongue and lip and thought they were better in Sydney than those mentioned. Unfortunately in New South Wales, as far as he knew, there was no accurate system of following up the patients and obtaining records of the result of operations in public hospitals. As a result of twelve years' work in the Sydney Hospital as assistant to a surgeon who operated very freely on malignant disease, he had come to the conclusion that it would be a great help to have some additional means of treating malignant disease. If surgical treatment was to be undertaken at all, it was necessary to perform very radical operations and special skill was required. It was a common thing to see patients sent to hospital after a small portion of the glandular area adjacent to the affected part had been incompletely operated on. He agreed with Dr. Molesworth that combination was valuable. Both the radiologist and the surgeon still looked at each other with suspicion. Each would

point out the bad results of the other. He would like to see both methods tried in the larger hospitals. Such trial should be made with fairness both between the radiologist and the surgeon. Some patients were drafted to one and some to the other. If surgery was to be the means used, its application should be thorough.

DR. MORAN in reply said that apparently they had got to the stage of the possibility of cooperation. The first step should be the formation of a committee to undertake a thorough investigation of the whole question. In regard to cooperation he quoted his experiences in New York. At one large hospital the whole staff met every Friday morning for discussion. It was not an optional meeting. Attendance by members of the staff was compulsory. A physicist and a pathologist were always present. Any unusual cases were discussed. There was no "stunting." Honesty and candour were in evidence. It was frequently the custom of practitioners of medicine to go in for the "staging of stunts," the successes and not the failures were discussed. Dr. Moran was strongly of the opinion that real progress would not be made until men came together to discuss their failures instead of their successes. The temper of men must be taken into consideration. It was no good saying hard things of one another. They should meet in a non-partisan and scientific spirit. He had seen something of the work in France. At every large hospital there was an attached cancer and radium centre. In a discussion about this question with Choyce the latter had told him that the results claimed from radiation had not been proved. He had, however, been struck by the fact that the patients treated by radiation had generally put on weight. Nutrition had been improved. In the old days of radium stimulation of the growth had often occurred. He thought that the time had arrived when each surgeon should have his own supply of radium.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal Alexandra Hospital for Children at Camperdown, on May 11, 1923, the President, DR. C. H. E. LAWES, in the chair.

Infantile Paralysis, Cerebral Type.

DR. E. H. M. STEPHEN showed a girl aged six years who had been admitted to hospital on April 12, 1923, with a history of having been ill for two days. The history given by the parents had been one of drowsiness, vomiting and fever. On admission the child had been hard to rouse. On examination the usual signs had been discovered, but in addition there had been one sign that was not always present. Although the pupil had reacted normally to light and accommodation, nystagmus had been very definitely present, particularly in an upward direction. Photophobia had been more marked than usual. The child's temperature had been 37.5° C. (99.6° F.) on admission. The temperature had not risen higher than this except on one occasion when it had become 37.8° C. (100.2° F.). Thirty cubic centimetres of cerebro-spinal fluid which was under increased pressure, had been removed by lumbar puncture. Two days later a second quantity of thirty cubic centimetres had been removed. In this sample no increase in the number of cells had been found. For the first few days after admission the patient had been very quiet, subsequently improvement had taken place, the weakness of the legs had improved and the patient had gradually been able to sit up. Kernig's sign had at first been present. The optic discs had been examined on two occasions by Dr. Temple Smith; on the first occasion he had been unable to find any abnormality, but on the second occasion he had reported the presence of a mild optic neuritis. The patient had come from Campsie. This was of interest in that more than one patient had recently been admitted from the same district with a similar condition.

Dr. Stephen's second patient was a boy of five years of age who had been admitted to hospital on February 26, 1923, suffering from acute anterior polio-myelitis with cerebral symptoms. He had been ill for six days prior to admission. The illness had started with pyrexia and vomiting and had been followed in twenty-four hours by weakness of the lungs. On admission he had been unable

to sit up and there had been but little power in his arms. The calf muscles had been tender and a certain amount of rigidity had been present in the left leg. The left knee jerks had been present, but there had been some doubt as to the presence of the knee jerks on the right side. There had been slight stiffness of the neck. On the day following admission the rigidity of the neck had become more noticeable and Kernig's sign had been present to a slight extent. The knee jerks had been unobtainable. Ten cubic centimetres of cerebro-spinal fluid under increased pressure had been withdrawn by lumbar puncture. In regard to this fluid the pathologist's report had been to the effect that no organisms had been found, but that there had been a slight increase of the cells. On the following day five cubic centimetres and then thirty cubic centimetres of clear cerebro-spinal fluid under increased pressure had been withdrawn. The pathologists had reported that the number of cells in this fluid had been slightly increased mainly in regard to the lymphocytes; polymorphonuclear leucocytes had also been present. The rigidity of the neck had subsequently decreased, but Kernig's sign had persisted for three weeks after admission. No reaction had been obtained on the application of the von Pirquet test nor had tubercle bacilli been found in the cerebro-spinal fluid. After a period of five weeks from admission the child had been able to sit up and to stand alone. The temperature throughout the course of the illness had been raised to only a slight extent. On one occasion only had it reached 38.4° C. (101° F.). There had been no change in the optic discs of this patient. His mental condition had been good, but an increased excitability of an emotional type had persisted.

Achondroplasia.

Dr. Stephen's third patient was a boy, aged four years, who was suffering from achondroplasia. He had the appearance of a child of two years of age. Dr. Stephen drew attention to the following points of interest. The lower extremities were very short and this was caused in large measure by the small size of the femur. In the other extremities the smallness of the humerus was most noticeable. The child's hand was shaped like a trident in the manner characteristic of the disease. The shape of the head was globular. The sunken appearance of the bridge of the nose was more apparent than real and was due to the prominence of the forehead. Dr. Stephen stated that the authors of text-books taught that the administration of thyroid gland extracts to these children was not productive of good. It was his custom, however, to use the drug. As a matter of fact he had used it with this patient for a period of nine months in doses of 0.06 gramme (1 grain). The child had made definite progress and was making efforts to walk from chair to chair, while previously he had been unable to stand. Like all other patients suffering from achondroplasia this child was really a very intelligent person. It was of interest to note that in olden times the advent of an achondroplastic individual into a family was often a source of income. On account of their extraordinary quick wit and intelligence these individuals had frequently been appointed court jesters.

Pseudo-Hypertrophic Muscular Atrophy.

In the absence of Dr. W. Evans, Dr. Stephen demonstrated a boy who was suffering from pseudo-hypertrophic muscular atrophy. He drew attention to the characteristic prominent appearance of the muscles of the calf, forearm and of the infra-spinal muscles, to the manner in which the patient assumed the erect from the recumbent position by "climbing up" his lower extremities and also to the typical prominence of the scapulae.

Infantile Paralysis.

Dr. J. MACDONALD GILL demonstrated several patients who had suffered from various forms of infantile paralysis.

DR. WILFRED VICKERS, D.S.O., showed a boy who had been attacked by infantile paralysis on December 13, 1920. He had come under treatment four months later when it had been discovered that his *tibialis anticus* muscle was paralysed and that the *tibialis posticus* was very weak. Since that time the child had been constantly under treat-

ment. Strapping and plaster of Paris had been applied for a period of six months to secure dorsi-flexion of the foot and later he had worn a boot and iron with a toe-raising spring. On March 2, 1923, he had still been without the power of dorsi-flexion of his foot. The *extensor hallucis*, however, had been acting strongly and Dr. Vickers had transplanted the tendon of this muscle into the tendon of the *tibialis anticus* muscle and into the insertion of that tendon. The foot had been kept in plaster for seven weeks. At the time of demonstration he could completely dorsi-flex his foot.

Intussusception with Meckel's Diverticulum.

Dr. Vickers also read the clinical history of and showed a patient who had suffered from intussusception with diverticulum (see page 699).

Pink Disease.

DR. E. S. LITTLEJOHN read a paper entitled "Pink Disease" (see page 689).

Familial Haemolytic Splenomegaly.

Dr. Littlejohn also read the clinical history of and demonstrated a patient suffering from familial haemolytic splenomegaly who had been treated by X-rays (see page 699).

Injections of Saline Solution in Gastro-Enteritis.

DR. MARGARET HARPER read a paper entitled "Injections of Saline Solutions in Gastro-Enteritis" (see page 693).

Intussusception.

DR. P. L. HIPSLEY showed a child aged five months who was suffering from intussusception. The child had been taken ill at 6 a.m. on May 11, 1923 (the day of the meeting). It had become pale and had vomited; several hours later it had passed some blood *per rectum*. The child had been brought to the hospital for admission at the time of the meeting. Dr. Hipsley demonstrated the mass which was present in the left side of the child's abdomen. He pointed out that there was no other disease in which symptoms of this nature occurred with such suddenness. As a rule parents were not alarmed with the advent of screaming and vomiting. But as soon as blood appeared from the bowel, the child was hurried to the doctor. In the summer time, when colitis often occurred, it was necessary to be particularly careful for such a child might easily be sent away with a prescription and with instructions to the parents to return on the following day. In the cooler weather this was not so liable to occur. The present patient was a female; it was interesting to note that males were more usually affected, the percentage in their case being about eighty. The condition generally occurred at between six and nine months of age. The children affected were always well nourished and were generally breast-fed. In regard to treatment, Dr. Hipsley had found that a large number of intussusceptions could be reduced by the rectal injection of saline solution. To obtain this result it was necessary to hold the catheter in the rectum for about six minutes and to allow the solution to flow from a height of about one metre. Dr. Hipsley said that some of his colleagues on the staff of the hospital did not agree with him as to the advisability of preaching this doctrine. There was difficulty on account of the experience which was necessary before it could be determined that the intussusception had been reduced. In this regard such treatment might be dangerous in the hands of general practitioners. At the same time, Dr. Hipsley held that it was certainly possible to reduce the intussusception in 60% of children and hence this method should be tried. In any case, if a general practitioner were not sure that reduction had been effected, he could give the injection and send the child to hospital for observation and, if necessary, operative treatment.

Talipes Equino-Varus.

Dr. Hipsley also showed a child that had suffered from double *equino-varus*. He pointed out that the treatment of this condition was comparatively simple if the patient were put under treatment during the first few weeks of life. In these circumstances it was possible to correct

the deformity within the space of four or five months. If, however, two or three months were allowed to elapse before the institution of treatment, a period of twelve months was required before a cure could be effected and even then constant supervision was necessary. He had treated one foot of the baby demonstrated by a new method. A silk ligament had been inserted from the base of the fifth metatarsal bone to the tibia. This ligament became infiltrated by connective tissue cells and by fibrous tissue. Later on he would recommend the removal of the ligament.

Rarefying Osteitis.

DR. R. B. WADE gave a short demonstration of a patient suffering from rarefying osteitis.

Skigrams.

An interesting series of skigrams was demonstrated in radiological department.

NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

SMALPAGE, EDWARD STANLEY, M.B., Mast. Surg., 1916 (Univ. Sydney), Darling Street, Balmain.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

EVANS, ARNOLD STRATHFULL, M.B., Ch.M., 1923 (Univ. Sydney), Dunedoo.

GUINEY, CLARENCE MICHAEL, M.B., Ch.M., 1923 (Univ. Sydney), Kogarah Road, Kogarah.

HARPER, MALCOLM DENHOLME HUNTER, M.B., Ch.M., 1923 (Univ. Sydney), 115, Avenue Road, Mosman.

HURMAN, EDITH MYRA, M.B., Ch.M., 1923 (Univ. Sydney), Royal Alexandra Hospital for Children, Camperdown.

TABLETON, ARTHUR, M.B., 1923 (Univ. Sydney), Baradine.

VALLACK, RICHARD, M.B., Ch.M., 1923 (Univ. Sydney), 33, McLaren Street, North Sydney.

THE undermentioned have been elected members of the Victorian Branch of the British Medical Association:

COLQUHOUN, COLIN GEORGE BURROWS, M.B., B.S., 1923 (Univ. Melbourne), 210, Walsh Street, South Yarra.

HAYDEN, JOHN GERALD EDWARD, M.B., B.S., 1923 (Univ. Melbourne), St. Vincent's Hospital, Fitzroy.

GUTHRIE, GEORGE HAROLD, M.B., B.S., 1923 (Univ. Melbourne), 4, Dendy Street, Brighton.

MILLAR, THOMAS GLASS, M.B., B.S., 1923 (Univ. Melbourne), Melbourne Hospital, Melbourne.

NOALL, OTTILE, M.B., B.S., 1923 (Univ. Melbourne), 25 Sussex Street, North Brighton.

O'DAY, KEVIN JOHN, M.B., B.S., 1923 (Univ. Melbourne), 102, Esplanade, Middle Brighton.

SHARWOOD, BEATRICE, M.B., B.S., 1923 (Univ. Melbourne), 200, Auburn Road, Auburn.

THE undermentioned have been elected members of the Queensland Branch of the British Medical Association:

GRAY, WILLIAM ROBERT SUTHERLAND, M.B., B.S., 1921 (Univ. Melbourne), Killarney.

LUKIN, FRANCIS WILLIAM RENNICK, M.B., Ch. M., 1923 (Univ. Sydney), Brisbane.

OVERSTEAD, JOHN EDWARD L.R.C.P. and S. (Edin.), L.F.P.S. (Glasg.), 1922, Pratten Street, Warwick.

QUINN, REGINALD GEORGE, M.B., Ch.M., 1923 (Univ. Sydney), Brisbane.

PIPER, KEITH ALEXANDER, M.B., Ch.M., 1921 (Univ. Sydney), Brisbane.

NOTICES.

THE COUNCIL OF THE QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION announces that the following arrangements have been made.

July 5, 1923.

At the Belle Vue Hotel, Brisbane.

ANNUAL DINNER of the Queensland Branch. The guests of honour will be Dr. George E. Rennie and Dr. W. H. Crago, of Sydney.

July 6, 1923.

At the B.M.A. Building, Adelaide Street, Brisbane.

GENERAL MEETING; DR. GEORGE E. RENNIE: "Glycosuria and Diabetes."

Country members are requested to intimate to the Honorary Secretary their intention to be present at the dinner not later than June 28, 1923.

THE COUNCIL OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION has arranged the following provisional programme of the Branch meetings. The Scientific Committee reserves to itself the right to modify the arrangement, but it is hoped that no changes will be necessary.

July 4, 1923.

At the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne Hospital, at 8.15 p.m..

MR. W. KENT HUGHES: "Small Defects that Cause Serious Foot Disability and Their Treatment: Corns, Bunions, Hallux Valgus, Hammer-Toe, Weak Ankles, Flat Foot, including Metatarsalgia."

August 1, 1923.

CLINICAL MEETING at the Alfred Hospital.

MISSING JOURNALS.

THE following journals, which have been received by THE MEDICAL JOURNAL OF AUSTRALIA as exchanges, are missing. Each copy bears the stamp impression of this journal. It is requested that the present possessors of these missing journals return them to this office.

The American Journal of Anatomy: May, 1920.

Bulletin of the Johns Hopkins Hospital: September, 1920.

Journal des Sciences Médicales de Lille: January 9, 1921.

La Presse Médicale: September 20, 1922.

New York Medical Journal: February 28, May 29, December 11, 1920; Index, January to June, 1921.

The Journal of Orthopaedic Surgery: February, 1921.

Post-Graduate Work.

POST-GRADUATE LECTURES IN MELBOURNE.

THE Melbourne Permanent Committee for Post-Graduate Work announces that Professor C. J. Martin, C.M.G., F.R.S., will deliver a short series of lectures on "Some Disorders of Nutrition," in September or October, 1923. Professor Martin has accepted the invitation of the Executive Committee of the Pan-Pacific Congress to attend the meetings in Sydney and Melbourne at the end of August and the beginning of September. As it is the policy of the Melbourne Permanent Committee for Post-Graduate work to utilize part of its funds for the purpose of arranging special series of lectures by distinguished visitors from the United Kingdom and America, the opportunity offered by Professor Martin's projected presence in Australia has been seized. Full details of the lectures will be announced at a later date.

Obituary.

HERBERT LETHINGTON MAITLAND.

ON May 25, 1923, an immense gathering of people, men holding high office in public affairs, representatives of many public organizations, medical practitioners, medical students, officials from the Sydney Hospital, men associated with private enterprises and private individuals joined the relatives of Herbert Lethington Maitland in paying a last tribute to an eminent surgeon cut off in the prime of life.

Herbert Lethington Maitland was born in 1863 at Tumut, in the southern part of the State of New South Wales. His father was district surveyor at Singleton and well known in connexion with the construction of railways in the State. He received his schooling at Newington College where he established for himself a reputation as a ready pupil and a keen sportsman. He was in the first football fifteen, in the first cricket eleven and prominent in the athletic field. In 1887 he matriculated and entered the Medical School of the University of Sydney. In his first year he occupied himself chiefly with subjects properly belonging to the Faculty of Arts. At the University he soon made his mark and was recognized as a "coming man." While he worked well and diligently, he did not neglect his physical training. He played in the first football fifteen and attracted much attention. In 1888 he was a member of the Newtown fifteen when this team gained the second place in the open competition. He also played cricket. At an early age he manifested a predilection for surgery and acquired great manipulative skill and dexterity. His knowledge of surgical pathology and anatomy was very sound and in his final year he came out top of the list. In 1892 he graduated in medicine and surgery. Immediately after graduation he was appointed to the resident staff of the Sydney Hospital. His appointment was almost contemporaneous with that of Dr. George Armstrong and that of Dr. C. E. Corlette. Dr. Walter Hull was the Medical Superintendent at the time and the members of the honorary staff included the late H. J. Tarrant, Maurice O'Connor, W. H. Goode and Thomas Chambers. Dr. Ralph Worrall was then Honorary Assistant Gynaecologist. Maitland remained on the resident staff for over two years. He served both as house surgeon and as house physician and for a brief period he acted as *locum tenens* to the Medical Superintendent during his absence on holiday. In 1894 he started practice in Elizabeth Street, Sydney, and rapidly established himself. He knew his work well and was not afraid of hard work. Three years later he was appointed Honorary Assistant Surgeon at the Sydney Hospital. He was chiefly associated

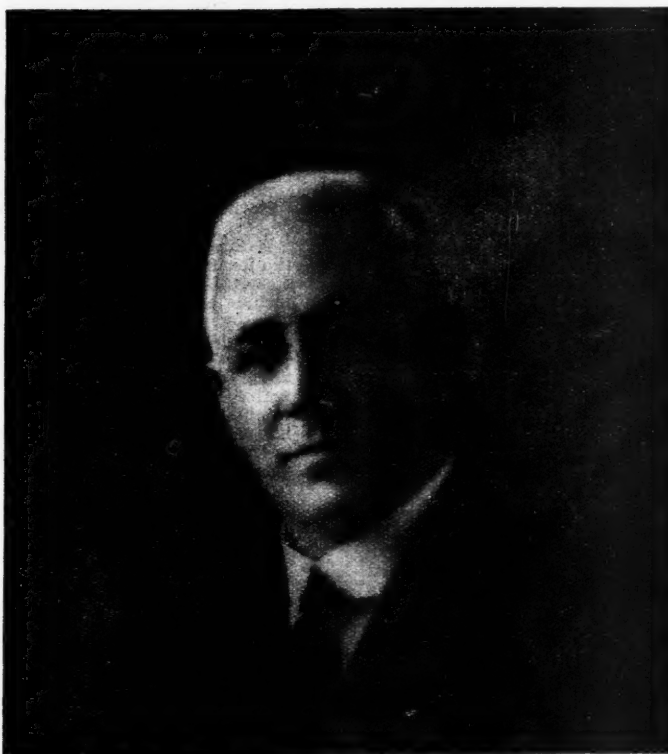
with the late Dr. Goode who at that period was in failing health. One result of this association was that Goode utilized Maitland's services to a considerable extent and the latter was not slow in taking full advantage of an opportunity that was unusual for a man under thirty years of age. His natural ability, his keenness and his foresight combined to enhance his operative skill. He had a retentive memory and was reliable as an observer. Experience born under these favourable circumstances laid the foundation of his success as a surgeon. In 1898 he married the daughter of the late Samuel Cook and moved to Lyon's Terrace where he practised for fourteen years. Little by little he emancipated himself from general practice in order to devote his energies to operative surgery. In 1902 he was appointed Honorary Surgeon at the Sydney Hospital. He worked assiduously and well for the hospital and used his increasing influence with the Board of Management to secure improvements in the surgical wards. When the hospital became a clinical school of the University in 1908,

Herbert Lethington Maitland was chosen to be the clinical lecturer. His lectures were eminently practical and always attracted the attention of students. His exposition was clear. He displayed his ingenuity and resourcefulness in these lectures as well as in his surgical practice. In emergency he could always find the safest road to travel; he knew that his skill and knowledge were reliable guides. While he taught clinical surgery to students and studied surgical pathology and surgical technique for the benefit of his patients, he wrote but little. He contributed six or seven clinical notes to the *Australasian Medical Gazette* between the years 1899 and 1906 and in 1906 he published in the same journal a description of his method of extirpating malignant growths in the neck. At the invitation of the originator and editor, he contributed a short article

to J. F. Binnie's "Manual of Operative Surgery" on this operation. It is also mentioned in W. W. Keen's "Surgery."

He was for many years interested in the affairs of the New South Wales Branch of the British Medical Association. He served as a member of the Council from the year 1904 to 1915 and in 1911-1912 he was President of the Branch. For many years he took an active and strong part in the discussions on the relation of the public and the profession in charitable institutions.

He received the honour of a knighthood in January, 1915, for his services to the community. The ardour of his activities in connexion with the Sydney Hospital and the manner in which he had assisted those in public office in dealing with many difficult problems in regard to the treatment of the sick poor found their recognition. When the South Sydney Hospital was founded, he was asked to accept the position of Honorary Surgeon. He accepted the offer and served in this capacity for many years. In a similar manner he became Honorary Surgeon



at the Royal Hospital for Women and the Coast Hospital. Shortly after the outbreak of war he applied for a commission in the Australian Army Medical Corps Reserve and on August 14, 1914, he was gazetted as Honorary Captain.

In 1915 the military authorities established the No. 4 Australian General Hospital at Randwick under the command of Lieutenant-Colonel G. Lane Mullins. Herbert Lethington Maitland was selected to be a surgeon with the rank of temporary Lieutenant-Colonel and was transferred to the Australian Army Medical Corps. His work at Randwick, as at the Sydney Hospital and elsewhere, was of a high order and proved of immense benefit to the soldier patients entrusted to his care. On July, 1919, he was retransferred to the Reserve of Officers in the Australian Military Forces.

His kindly disposition and his solicitude for all appealing to him for help endeared him to a host of people in the State of New South Wales. He resisted the call to visit the older world and to learn from the masters in other countries. This, together with the fact that his contributions to surgical literature were few, alone stood between him and international fame. At home he was an authority in surgery and a master of surgical technique.

In the year 1920 the Board of Management of the Sydney Hospital erected an excellent lecture theatre on the upper floor of the Renwick block at a cost of about three thousand pounds. Herbert Maitland had called attention to the fact that there was no suitable lecture theatre at the hospital and that the only place where lectures could be delivered was the chapel. The theatre was called the Maitland Lecture Hall and a tablet was placed in it with the following inscription:

Erected in Recognition of the Services to this Hospital as Surgeon and Lecturer by Sir Herbert Lethington Maitland; 1920.

In 1919 he was attacked by influenza, that uncanny enemy that has left its deep scores on many strong, healthy men and women. At first it seemed as if the damage done was great. Later it seemed as if his healthy body had thrown off the effects. In all probability the virus had attacked his myocardium and had left an indelible impression. After a relatively short time he appeared to have regained his former health. In January, 1920, he took part in a cricket match between the members of the honorary staffs of the Sydney and the Royal Prince Alfred Hospitals. It was, it is true, not very serious cricket, but Herbert Maitland exerted himself quite as much as any of his younger colleagues. In 1921, he became senior surgeon at the Sydney Hospital. He worked hard and was rarely tired. Quite recently his resistance weakened a little, but neither his relatives nor his intimate friends found cause for anxiety. On May 23, 1923, after an apparently slight digestive disturbance, he died suddenly in his rooms in Macquarie Street before medical assistance could be rendered.

The whole-hearted sympathy of the medical profession has been extended to his widow and to his two sons, both of whom are studying medicine at the University of Sydney.

At a meeting of the New South Wales Branch of the British Medical Association held on May 25, 1923, Dr. C. H. E. Lawes, the President, moved the following which was adopted in silence:

That this meeting of members of the New South Wales Branch of the British Medical Association puts on record its sense of the great loss it has sustained through the death of one of its most distinguished members, Sir Herbert Lethington Maitland, and desires to convey its sincerest sympathy to Lady Maitland, her two sons and members of the family.

The following resolution was adopted at a meeting of the Board of Management of the Sydney Hospital on May 23, 1923:

It is our sad duty to record the death of Sir Herbert Maitland which took place on Wednesday last, the 23rd instant.

With appalling suddenness his great career closed, leaving his friends with a painful sense of personal loss and causing a blank that will be keenly felt throughout the whole community.

Sir Herbert began his association with the Sydney Hospital in 1892. He was the first graduate of the Sydney Medical School to be appointed to the Honorary Staff of the Hospital.

In 1895 he became Honorary Assistant Surgeon and in 1902 was appointed to the full staff.

In 1908 when this hospital became a teaching school, he was appointed the first lecturer in clinical surgery and occupied that position with marked distinction up to the time of his death.

He became Senior Surgeon on the retirement of Dr. R. Steer Bowker in 1921.

Possessed of great natural gifts and with a keenness for his work he soon acquired a mastery of the science to which he had dedicated his life. These qualities, generously and faithfully applied in his surgery, in the wards and in the operating theatre, made him the brilliant surgeon that he was, entitled to rank amongst the foremost men in the Empire.

His wide experience, his clear vision and sound judgement rendered his advice of great value in the councils and business management of the hospital, as well as in the work in the lecture hall and in the wards.

Every department of this hospital which he loved so well and where his triumphs were won, will join in expressing profound sorrow for his loss and our grateful remembrance of a great surgeon, a great humanitarian and a cherished friend.

His distinguished services rendered so generously as a surgeon and lecturer to the Sydney Hospital deserve some appropriate permanent memorial.

It is suggested that such memorial might take the form of a new wing to be added to the Sydney Hospital, when space can be made available, and to include amongst other things a suitable and up-to-date out-patients' department and thus make further provision for the sick poor of the city.

There are thousands of people throughout New South Wales who have benefited either directly or indirectly from his skill and devotion and who would doubtless wish to join with the hospital in such a movement. At a later stage it is proposed to take preliminary steps to give effect to this object.

LEONARD ROY COOK.

THE knell of the war bells has not yet ceased, despite the years of ostensible peace. Some of those who "fell in" when the call came for defenders of Empire, are still being called from their earthly mission. Their names are written in bold letters of gold on the roll of fame. They did their duty and paid the full price. The medical profession has been forced to yield another of its heroes. Leonard Roy Cook died on April 21, 1923, at the Prince of Wales's Hospital, Randwick, New South Wales, from a pulmonary affection, the result of gas poisoning at Pozieres. Although his immediate circle of friends in the medical profession was probably small, his death at the early age of thirty-four years, has moved every member of his profession deeply, as only these war tragedies can.

Leonard Roy Cook was born at Elphin Grove, Hawthorn, Victoria, on October 7, 1888. He received his schooling at Auburn and at the South Melbourne College. In 1907 he matriculated and entered the Medical School of the University of Melbourne. His student career was a highly successful one. Always popular on account of geniality and happy disposition, he attracted to himself very many friends from among his contemporaries and not a few from among his seniors. Not only was his figure familiar on the cricket fields, but he commanded a prominent position in the class room. He graduated in medicine and surgery in 1912.

During the years 1913 and 1914 he worked as Resident Medical Officer at the Melbourne Hospital and then secured a house appointment at the Women's Hospital. In these positions he acquitted himself with great credit. His patients benefited from his sympathetic attention and his

sound knowledge of his professional work. Early after the outbreak of war he applied for a commission in the Australian Army Medical Corps and was gazetted as Captain on May 1, 1915. He left Australia on board the *Mooltan* on May 15, 1915. At first he was drafted to Luna Park, in Egypt; then he was transferred to the hospital ship *Alannia*. After a short time, he was sent to Gallipoli where he remained on active service until the evacuation. He then went with the Second Field Ambulance to France. For some time he was attached as Regimental Medical Officer to the First Battalion and later he was with the Sixth Field Ambulance. During this period his work exposed him on many occasions to grave danger and at Pozieres he sustained a severe poisoning by gas. General Sir Douglas Haig included Leonard Roy Cook's name in one of his late despatches, dated March 16, 1919, for conspicuous and excellent service. He received his majority on January 29, 1917. Late in 1918 he was attached to the No. 3 Australian General Hospital, at Abbeville. He was still in this post when the armistice was signed. He returned to Australia as Senior Medical Officer on board the *Port Denison*, in May, 1919.

Once again in Victoria he chose the wise course of filling a position in an institution before settling in private practice. He secured the appointment of Assistant Pathologist under Dr. Reginald Webster, at the Children's Hospital, Carlton, and displayed his many gifts and sound knowledge in his work. In May, 1920, he gained the degree of doctor of medicine for an admirable thesis. About this time he entered private practice in Hay, New South Wales. His personal and professional qualities determined the immediate success of his undertaking. On April 19, 1921, he married Miss Keith Walsh, of North Carlton. Early in 1922 he was appointed senior medical officer of the Hay Hospital.

From the foregoing outline of his career it may not be apparent that Leonard Roy Cook possessed all the qualities that make for success in medical practice and that contribute to the dignity and traditions of the medical profession. He was loyal and generous to an unusual degree and possessed a sunny nature which attracted to him very many friends. Dr. Webster informs us that he was an ideal colleague, stimulating and refreshing. To work with him was a real pleasure; to spend time with him in recreation was a joy.

He knew that his pulmonary complaint was the result of his experience at Pozieres. He must have been aware of its serious nature, but he bore himself bravely, maintaining a cheerful outlook. He refused to give in until it was no longer possible to carry on his work. The sympathy of the medical profession is extended to his widow and his parents, Mr. and Mrs. F. H. Cook, of Elphin Grove, Upper Hawthorn, Victoria.

GEORGE EDWARD MILES.

WE regret to announce the death of Dr. George Edward Miles, C.B.E., which took place on June 11, 1923, in Sydney.

ARTHUR GERALD MCGOWAN.

It is with regret that we have to announce the death of Dr. Arthur Gerald McGowan which took place at Ballarat, Victoria, on June 13, 1923.

Correspondence.

THE MEASUREMENT OF INTELLIGENCE OF SCHOOL CHILDREN.

SIR: I have read with considerable interest Mr. Phillips's communication before the New South Wales Branch of the British Medical Association on the above subject. He is to be congratulated on his lucid exposition of the subject as it presents itself to a layman. It is, however, almost inevitable that, when laymen and the profession jointly discuss a problem primarily medical in nature, misunderstandings arise from a natural inability to understand the opposite view point.

Mr. Phillips errs in believing that my views support Spearman's theories as to the nature of intelligence. Personally I am unable to define intelligence, but I am quite certain that it cannot be measured. On the other hand I am entirely with Mr. Phillips when he says that intelligence "exhibits differences in human beings and that these differences are measureable." These can indeed be measured with a degree of accuracy which is even painful to some individuals.

It is not correct to state that it has sometimes been asserted that "intelligence can be measured indirectly by taking certain physical measurements, usually cranial." It is the exact converse which has been repeatedly proved and asserted. Head measurement cannot possibly measure intelligence. What it can and does do is to give in some instances an approximate indication of the relative state of development of the cortical layers of the brain and this information is of the greatest diagnostic value in the very class of cases where it is most essential that such information should be known.

My work on the cranial capacity of Australian children was not undertaken, as Mr. Phillips supposes, with a view to the establishment of the correlation between volume of brain and intelligence. Its object and results are set forth in my recently published Stewart Lectures on the "Newer Psychology."

Under ordinary circumstances it would be of small moment whether a layman did or did not understand the objects and utility of head measurement as a diagnostic aid, but with a medical audience it is altogether different. Such misunderstanding is apt to obscure the real medical value of the procedure. If, therefore, any of Mr. Phillips's readers have been unwittingly led to believe that head measurement is merely an imperfect physical measure of intelligence, they are very far from realizing the true facts of the case. These, Dr. Anderson and myself hope to set forth in our forthcoming publication "Brain and Mind," together with many clinical examples of the whole of our procedure and reasons therefor.

Further, if the Porteus maze tests are only to be regarded as a measure of general intelligence, I am not surprised to read that Mr. Phillips has found them unsatisfactory. The same applies to all other intelligence tests singly applied. It is not sufficiently realized by lay psychologists and probably not at all by the medical profession that the Binet and Porteus tests do two totally different things. The former are measures of receptor impulses, the latter of effector and naturally give different results. Read in conjunction and supported by a clinical history and head measurement, which often gives some indication of the probable state of development of the cortical layers of the brain, the clinician is in an altogether different position and can diagnose his case with an accuracy far exceeding anything which can be obtained from any singly applied so-called "intelligence" test.

I am pleased to see that Mr. Phillips emphasizes, as I did in my recently published Stewart Lectures, the national value of the super-normal child and the wicked wastefulness of the cerebral ament. The diagnosis of the latter is an essentially medical problem and I cannot too strongly urge the members of my profession not to allow this matter, through ignorance of modern neurology or from an imperfect knowledge of mental testing, that is of the probable reactions of the individual to his environment, to drift out of their hands.

I am, etc.,

RICHARD J. A. BERRY, M.D.

University of Melbourne,
June 5, 1923.

Proceedings of the Australian Medical Boards.

VICTORIA.

THE undermentioned have been registered under the provisions of the *Medical Act, 1915*, as duly qualified medical practitioners:

McCUMISKY, PHILIP BERNARD, M.B., B.S., 1923 (Univ. Melbourne), 64, Bay Street, North Brighton.

NOAILL, OTTILIE, M.B., B.S., 1923 (Univ. Melbourne),
25, Sussex Street, Middle Brighton.

Additional Diploma Registered.

LORIMER, GEORGE NORMAN, M.R.C.P., 1922 (Lond.).

Names of Practitioners Restored to the Register.

GREGG, JAMES, Lower Fern Tree Gully.

KENNEDY, JOHN WILLIAM, Australian Bank of Commerce, Collins Street, Melbourne.

Names of Deceased Practitioners Removed from the Register.

COOK, HENRY WILLIAM JAMES.

COOK, LEONARD ROY.

MCLAY, ROBERT GALLOWAY HOLMBY.

Books Received.

ENVIRONMENT AND RESISTANCE IN TUBERCULOSIS, by Allen K. Krause; 1923. Baltimore: Williams and Wilkins Company; Crown 8vo., pp. 137. Price: \$1.60.

MONOGRAPHS ON BIOCHEMISTRY: THE CHEMISTRY OF UREA, by Emil A. Werner, M.A., Sc.D., F.I.C.; 1923. London: Longmans, Green and Company; Royal 8vo., pp. xii. + 212. Price: 14s. net.

NURSERY GUIDE FOR MOTHERS AND NURSES, by Louis W. Sauer, M.A., M.D.; 1923. St. Louis: C. V. Mosby Company; Crown 8vo., pp. 188, with twelve illustrations. Price: \$1.75.

THE EXPECTANT MOTHER AND BABY'S FIRST MONTH (FOR PARENTS AND NURSES), by F. Truby King, C.M.G., M.B., B.Sc. (Public Health), Edin.; 1923. Sydney: Angus and Robertson, Limited; Demy 8vo., limp cover, pp. 123, with eighteen illustrations. Price: 2s. 6d. net.

STUDIES IN MENTAL DEVIATIONS, by S. D. Porteus; 1923. Published by The Training School at Vineland, N.J. (U.S.A.), Department of Research, No. 24, October, 1922; Post 8vo., pp. ix. + 276, with thirteen figures.

TRANSACTIONS OF THE AMERICAN PROCTOLOGIC SOCIETY: TWENTY-THIRD ANNUAL SESSION, 1922; 1923. New York: Paul B. Hoeber; Royal 8vo., pp. xii. + 124, with two illustrations. Price: \$3.00.

VENEREAL DISEASE IN THE AMERICAN EXPEDITIONARY FORCES, by George Walker, M.D.; 1922. Baltimore: Medical Standard Book Company; Demy 8vo., pp. xxiii. + 237. Price: \$2.50.

Medical Appointments.

DR. J. J. D. HARRIS (B.M.A.) has been appointed, on probation, a District Health Officer in Victoria.

DR. W. H. N. RANDALL (B.M.A.) has been appointed Government Medical Officer at Murgon, Queensland.

The following have been appointed Members of the High School Councils of the respective places in South Australia: DR. KEITH McEWIN (B.M.A.), at Balaklava; DR. C. H. SCHAFER (B.M.A.), at Peterborough; DR. R. A. GOODE (B.M.A.) and DR. D. M. STEELE (B.M.A.), at Port Lincoln; DR. R. McM. GLYNN (B.M.A.), at Riverton; DR. H. H. FORMBY (B.M.A.), at Strathalbyn.

The undermentioned have been authorized by the Board of Health of New South Wales as Inspectors under the Cattle Slaughtering and Diseased Animals and Meat Act, 1902: DR. F. E. DAWSON (B.M.A.), at Milton; DR. R. J. ORFORD (B.M.A.), at Stroud; DR. C. E. PERCY (B.M.A.), at Manildra.

Medical Appointments Vacant, etc..

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xviii.

ROYAL AUSTRALIAN NAVY: Vacancies for Medical Officers.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmmain United Friendly Societies' Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phoenix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

- JUNE 26.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
JUNE 27.—Victorian Branch, B.M.A.: Council.
JUNE 28.—South Australian Branch, B.M.A.: Branch.
JUNE 29.—New South Wales Branch, B.M.A.: Branch.
JULY 3.—New South Wales Branch, B.M.A.: Council (Quarterly).
JULY 4.—Victorian Branch, B.M.A.: Branch.
JULY 6.—Queensland Branch, B.M.A.: Branch.
JULY 10.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 11.—Western Australian Branch, B.M.A.: Council.
JULY 11.—Melbourne Pædiatric Society.
JULY 12.—Victorian Branch, B.M.A.: Council.
JULY 13.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 13.—Queensland Branch, B.M.A.: Council.
JULY 13.—South Australian Branch, B.M.A.: Council.
JULY 17.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JULY 18.—Western Australian Branch, B.M.A.: Branch.
JULY 24.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

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